SEQUENCE LISTING

HillOn Duvick, Jonathan P.
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Rao, Aragula Gururaj
Crasta, Orwald R.
Folkerts, Otto

 $\pm 1.00 < \text{Amino Polypl Amine Oxidase Polynucleotides and Related Polypeptides and Methods of Use$

4150 - 1154R

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11111: 2 10 1-19-1-

+181 + UN AR 1392,936

+11510 1098-07-09

*1:39 US #3:138,391

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+150 DA 09/382,159

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· 150. - Up (9/352,168

+1510 1999-07-12

-:1600 5:

+1700 PatentIn version 3.1

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<213> Exophiala spinifera

 $\cdots) () \cdot \cdot$

clill: musc_feature

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eraj (ur.	
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+ P1(++ p + P11 + P9 + P12 + TMA + P13 + Artificial Sequence	
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gag 31ı	gog Ala	atg Met 35	gat Asp	cgt Arg	gta Val	ggg Gly	393 317 40	aag Lys	act Thr	ctg Leu	agc Ser	gta Vil 45	caa Gln	tog Ser	ggt Gly	1	-1-1
303 Pro	gly gga	agg Arg	acg Thr	act Thr	atc Ile	aac Asn 55	gae Asp	otic Leu	gge Gly	gct Ala	gēg Ala 60	tgg Trp	atc Ile	aat Asn	gac Asp	1	9.3
agc Ser 65	aac Asn	caa Gln	ago Ser	gaa Glu	gta Val 70	tod Ser	aga Arq	titg Leu	tt" Ph⊖	gaa 31u 75	aga Arg	t:t Phe	cat His	ttg Leu	gag Glu 30	.2	4:)
ggc	gag Glu	Leu	cay Gin	ang Ang 3n	acg Thr	act Thr	314 314	aat Asn	toa Ser 90	atc	cat His	caa Gln	gca Ala	caa Gln 95	дас Азр	.2	3:
ggt Gly	aca Thr	acc Thr	ast Thr 100	a ta Thr	get Ala	act Pro	tat. Tyr	ggt Gly 195	gac Asp	toc 3er	tig Leu	ot.g Leu	agc Ser 110	gåg Glu	glu	3	36
gtt Val	gca Ala	agt Ser 115	goa Ala	cit Leu	geg Ala	gaa Glu	oto Leu 120	ctc Leu	coc Pro	gta Val	tgg Trp	tot Ser 135	cag Gln	ctg Leu	atc Ile	3	44
gaa Glu	gag Glu 130	cat His	a je Ser	att Leu	caa Gln	gac Asp 135	etc Leu	aag Lys	gog Ala	agc Ser	cat Pro 140	cag Gln	gog Ala	aag Lys	ogg Arg	4	30
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act Pro	gct Ala	gtt Val	ctc Leu	ggc Gly 165	gta Val	gca Ala	aac Asn	cag Gln	atc Ile 170	aca Thr	ege Arg	got Ala	ctg Leu	ctc Leu 175	ggt Gly	5.	28
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cag Gln	tat Tyr 210	atg Met	oga Arg	tgc Cys	aaa Lys	aca Thr 215	ggt Gly	atg Met	cag Gln	tog Ser	att Ile 220	tgc Cys	cat His	gcc Ala	atg Met	6	72
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Glu	Ile	Glu	Gln	Ser 245	Ala	Ser	Зlу	Cys	Thr 250	Val	Arg	Ser	Ala	3er 235	Gly	
					aaa Lys											P16
					t†t P∷e											le ĝ.ĝ
					atc Ile											11.
					tgg Trp 313											<u>,+5</u> (
					ato Ile											1:08
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4.112 · PRT

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Pro Gly Arg Thr Thr Tle Asn Asp Leu Gly Ala Ala Trp Ile Asn Asp 50 55 60

Ner Asn Gin Ser Glu Val Ser Arg Leu Phé Glu Arg Phe His Leu Glu 80 70 75 30

Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln Asp 35 90 95

Gly Thr Thr Thr Thr Ala Pro Tyr Gly Asp Ser Leu Leu Ser Glu Glu 100 105 110

Val Ala Ser Ala Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu Ile 115 120 125

Giu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Pro Gln Ala Lys Arg 130 135 140

Leu Asp Ser Val Ser Phe Ala His Tyr Cys Glu Lys Glu Leu Asn Leu 145 150 155 160

Pro Ala Val Leu Gly Val Ala Asn Gln Ile Thr Arg Ala Leu Leu Gly 165 170 175

Val Glu Ala His Glu Ile Ser Met Leu Phe Leu Thr Asp Tyr Ile Lys 180 185 190

Ser Ala Thr Gly Leu Ser Asn Tie Phe Ser Asp Lys Lys Asp Gly Gly 195 205

Gln	Tyr 210	Met	Arg	Cys	Lys	Thr 215	Зly	M∙÷t	Gln	Ser	Ile 220	Суз	His	Ala	M⊖t
Ser 225	Lys	Glu	Lea	val	Pro 230	Зly	3e:	Val	His	Leu 235	Asn	Fh.c	Pro	Val	Ala 240
Ğlu	Tle	Glu	Gln	3er 245	Ala	Ser	Sly	Cys	Γhr 250	Val	Arg	Jer	Ala	Ser 255	Gly
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Tyr	Pro	Thr 275	Leu	'Thr	Pr.e	Ser	Pro 280	Pro	Je∵	Pro	Alā	Glu 285	Lys	Glrı	Ala
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Lys	Trp	Ser 355	Gln	Glr.	Ser	Lys	Gln 360	Vāl	Arq	Gln	Lys	Ser 365	Val	Trp	Asp
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Ala 385	Asn	Val	Leu	Glu	Ile 390	Glu	Trp	Ser	Lys	Gln 395	Gln	Туr	Phe	Gln	Gly 400
Ala	Pro	Ser	Ala	Val 405	Tyr	Gly	Leu	Asn	Asp 410	Leu	Ile	Thr	Leu	Gly 415	Ser
Ala	Leu	Arg	Thr 420	Pro	Phe	Lys	Ser	Val 425	His	Phe	Val	Glÿ	Thr 430	Glu	Thr

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+110.+ +111.+ cos +112.+ (099)(1 +113.+	439)			
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ago aac caa ago Ser Asn Gln Ser 65				
ggo gag oto cag Gly Glu Leu Gln				
ggt aca acc act Gly Thr Thr Thr 100			Ser Leu Leu	

gtt gca Val Ala						al Trp				394
	cat ago His Ser									43.)
	ağt ğış Sər Val	Ser P				.u Lys				4ून) -
	gtt ot: Val Le:									E.14
gtg gaa Val Glu	jed da: Ala His 180	: Glu I			i Phe Le					Ē., !}
agt god Ser Ala	acc ggt The Gly 193					ey£ q				6.71
cag tat Gln Tyr 210				dåpåeå,	gtg gtg	atagtet)	c aggtg	d åråråe	1	675
atagttt	oto agtq	gtoatt							g tida	72.
			(11)	ly Met ≀	lln Ser	Ile Cy. 220	s His A	la Me	et der 125	
aag gaa Lys Glu			ga taa	qtq ca	: oto aa	220	add gta	get	J25 gaa	726
	Leu Val	Pro G 230 goa to Ala 3	go toa ly Ser oo ggo	qtq car Val His	: ctc aa : Leu As 235 : gta cç : Val Ar	220 ac acc an Thr	ede gte Pro Val	get Ala 240	J25 gaa G1u gee	776 824
Lys Glu att gag	cag too Gln Ser 245	Pro G 230 goa to Ala So	go toa ly Ser co ggo er Gly ag gtg	qtq ca Val His tqt aca Cys Th: 25: qtq qt	: ctc aa : Leu As 235 : gta cc : Val Ar	220 acc acc and Throgan tog Ser acception From the control of the	occ gto Pro Val ged tog Ala Ser 255	got Ala 240 ggc Gly	J25 gaa Glu god Ala	
Lys Glu att gag Ile Glu gtg ttc	cag tog Gln Ser 245 cga agc Arg Ser 260 ttg aca	Pro G 230 gga to Ala 30 aaa aa Lys L	go toa ly Ser oo ggo er Gly ag gtg ys Val	qtq car Val His tqt aca Cys The 250 qtq qtt Val Val 265	: ctc aa : Leu As 235 : gta cç : Val Ar) : tcg tt : Ser Le	220 acc acc acc acc acc acc acc acc acc ac	occ gto Pro Val ged tog Ala Ser 255 aca aco Thr Thr 270	get Ala 240 ggc Gly ttg Leu	J25 gaa Glu gcc Ala tat Tyr	804
att gag Ile Glu gtg tto Val Phe	cag tog Gln Ser 245 cga ago Arg Ser 260 ttg aca Leu Thr	Pro G 230 gga to Ala 30 aaaa a Lys 10 ttt t Phe 30	go toa ly Ser oo ggo er Gly ag gtg ys Val ca coa er Pro 280 tg ggo	qtq car Val His tqt aca Cys Thr 259 qtq qtr Val Val 265 cot ctr Pro Les	: ctc aa : Leu As 235 : gta co : Val Ar) : tcg tt : tcg tt : Ser Le : ccc gc	220 acc acc acc acc acc acc acc acc acc ac	acc gto Pro Val ged tog Ala Ser 285 aca acc Thr Thr 270 aag caa Lys Gln	get Ala 240 ggo Gly ttg Leu gca Ala	J25 gaa Glu gcc Ala tat Tyr ttg Leu	804
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oga Arg	caa Gin	tgg Trp 340	toc Ser	att Ile	acc Thr	tgt Cys	ttc Phe 345	Met	gto Val	gga Gly	gac Asp	ccg Pro 35)	ggā Gly	cgg Arg	aag Lys	1112
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ctc Leu 370	cực Arg	gca Ala	gcc Ala	tac Tyr	gag Glu 375	aac Asn	gcc Ala	999 999	gcc Ala	caa Gln 380	gte Val	cca Pro	gag Glu	oog Pro	gcc Ala 385	1203
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oog Pro	agc Ser	gcc Ala	gtc Val 405	tat Tyr	egl A Add	ctg Leu	aac Asn	gat Asp 410	ctc Leu	atc Ile	aca Thr	ctg Leu	ggt Gly 415	tog Ser	gcg Ala	1304
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Gly	Glu	Leu	Gln	Arg 35	Thr	ľhr	Gly	Asn	3er 90	lle	His	31n	Ala	Gln 95	Азр
Gly	Thr	Fhr	Thr 190	Thr	Ala	Pro	Tyr	Gly 105	Asp	Ser	Leu	Leu	Ser 110	Glu	Glu
Val	Ala	3er 115	Ala	Leu	Ala	Glu	Let: 121	Leu	Pro	Vál	Trp	Ser 125	Glr.	Leu	Ile
Glu	Glu 130	His	Ser	Leu	Gln	Asp 135	Ľe".	lys.	Ala	3er	Pro 140	Glr.	Ala	Lys	Arg
Leu 145	Asp	Ser	Vāl	Ser	Phe 150	Ala	His	Tyr	Сув	Glu 155	Lys	Glu	Leu	Asn	Leu 160
Pro	Ala	Val	Leu	Gly 165	V.a.,I.	Ala	Asr.	Glr.	Ile 170	Th.r	Arg	Ala	Leu	Leu 175	Gly
Val	Glu	Ala	His 180	Glu	I,l €	Ser	Met	Leu 195	Phe	L∈u	Thr	Asp	Tyr 190	Γl⊖	Lys
Ser	Ala	Thr 195	Gly	Leu	Ser	Asn	11e 200	Phe	Ser	Аєр	Lys	Lys 205	Asp	Gly	Gly
Gln	Tyr 210	Val	Arg	Cys	Lys	Th.r 215	Gl;	Met	Glm	Ser	Ile 220	Cys	His	Ala	Met
Ser 225	Lys	Glu	Leu	Val	Pro 230	Gly	Ser	Val	His	Leu 235	Asn	Thir	Pro	Val	Ala 240
Glu	Ile	Glu	Gln	Ser 245	Ala	Ser	G17.	Cys	Thr 250	Val	Arg	Ser	Ala	<i>3</i> er 255	Gly
Ala	Val	Phe	Arg 260	Ser	Lys	Lys	Val	Val 265	Vāl	Ser	Leu	Pro	Thr 270	Thr	Leu
Tyr	Pro	Thr 275	Leu	Thr	Phe	Ser	Pro 280	Pro	Leu	Pro	Ala	G.l _i u 285	Lγε	Gln	Ala

Leu Ala Glu Asn Ser Ile Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val 300 Trp Asp Lys Pro Trp Trp Arg Glu Gln G., Phe Ser Gly Val Leu Gln 310 315 320 Ger Ger Cys Asp Pro Ile Sor Phe Ala Arg Asp Thr Ser Ile Asp Val 325 333 Asp Arg Gln Trp Ser Ile Thr Cys Phe Met Val Gly Asp Pro Gly Arg 340 345 Lys Trp Ser Gln Gln Ser Lys Gln Val Arg Gln Lys Ser Val Trp Asp 355 360 3 6 5 G!n Leu Arg Ala Ala Tyr G!u Asr. Ala Gly Ala Gln Val Pro Glu Pro 370 31.5 38.0 Ala Asr. Val Leu Glu Ile G.u Trp Ser Lys Gln Glr. Tyr Phe Gln Gly 385 39C 395 400 Ala Pro Ser Ala Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser 405 416 415 Ala Leu Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu Thr 425 420 Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln 435 440 Arg Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala

·:2100 9

√211 - 458

450

4012 > PRT

-213 - Exophiala spinifera

.:400 → 9

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4.55

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 $4\,60$

20 25 30

Glu Ala Met Asp Arg Val Gly Gly Lys Thr Leu Ser Val Gln Ser Gly 35 40 45

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- Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln Asp 85 90 95
- Gly Thr Thr Thr Ala Pro Tyr Gly Asp Ser Leu Leu Ser Glu Glu 100 $$105\$
- Val Ala Ser Ala Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu Ile 115 120 125
- Glu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Fro Gln Ala Lys Arg 130 135 140
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- Gly Leu Val Ser Gln Trp Ser Phe Gln Val Cys Ser Arg Phe Ala Met 225 230 230 235
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Ser Leu Lys Leu Ser Ser Arg His Pro Ala Val Gln Tyr Asp Arg Pro 2(0) 265 Arg Ala Pro Cys Ser Glu Ala Lys Arg Trp Trp Phe Arg Tyr Arg Gln 280 Pro Cys Ile Pro Pro His Phe His His Leu Phe Pro Pro Arg Ser Lys 295 300 290 His Trp Arg Lys Ile Leu Ser Trp Ala Thr Ile Ala Arg Ser Ser Tyr 310 315 Gly Thr Ser And Gly Gly Ala Asn Lys Ala Ser And Ala Ser Ser Asn 325 330 335 Arg Ala Val Thr Pro Ser His Leu Pro Glu Ile Pro Ala Ser Thr Ser 345 fle Asp Asn Gly Pro Leu Pro Val Sor Trp Ser Glu Thr Arg Asp Gly 355 360 365 Ser Gly Pro Asn Ser Pro Ser Arg Tyr Asp Lys Ser Leu Ser Gly Thr 375 380 Asn Ser Ala Gln Pro Thr Arg Thr Pro Gly Pro Lys Ser Gln Ser Arg 385 390 Pro Thr Cys Ser Lys Ser Ser Gly Arg Ser Ser Ser Ile Ser Lys Glu 410 415 Leu Arg Ala Pro Ser Met Gly Thr Ile Ser Ser His Trp Val Arg Arg 420 425 430 Ser Glu Arg Arg Ser Arg Val Phe Ile Ser Leu Glu Arg Arg Arg Leu 435 440 445 Phe Gly Lys Gly Ile Trp Lys Gly Pro Tyr 450 455 -210> 10 <211> 1392

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	g god god ggt big ibo igo bid git 96 n Ala Ala Gly Leu Ser Cys Leu Val 25 3)
	g gga aag act otg ago gta baa tog ———————————————————————————————————
	o gao oto ggo got gog tgg ato aat (192 n Asp Leu Gly Ala Ala Trp Ile Ash 60
	r aga tig tit gaa aga tit dat tig 240 r Arg Leu Phe Glu Arg Phe His Leu 75 80
	t gga aat toa ato oat caa goa caa — 288 r Gly Asn Ser Ile His Gln Ala Gln 90 — 95
	t tat ggt gad tod ttg dtg agd gag — 336 5 Tyr Gly Asp Ser Leu Leu Ser Glu 105 — 110
	a oto oto oco gta tgg tot dag otg
	o oto aag gog ago oot bag gog aag —— 432 p Leu Lys Ala Ser Pro Gln Ala Lys 140
	g dad tad tgt gag aag gaa dta aad ———480 a His Tyr Cys Glu Lys Glu Leu Asn ————————————————————————————————————
	a aas sag ats asa sgs got etg etc 528 a Asn Gln Ile Thr Arg Ala Leu Leu 170 175

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						coa Pro										· (1)
						gdā Ala										
						aaa Lys										806
						tit Phe										€ 641
						ato Ile 295										912
_		-	_	-		tgg Trp	_	-				-	-	_		960
						ato	tida	ttt	~ ~ ~							
			Бұз	325	Pro	Il⊕	3er							Ile 335	-	1008
		cga	caa	325 tgg	tad	Ile att Ile	add	Phe tgt	Ala 330 ttc	Arg atg	Asp gtc	Th.r gga	Ser gac	Ile 335 ccg	Asp	1008 1056
Val egg	Asp	oga Arg tgg	caa Gln 340	325 tqq Trp	toc Ser cag	att	acc Thr	tgt Cys 345	Ala 330 ttc Phe	Arg atg Met	Asp gtc Val	Thr gga Gly aag	Ser gac Asp 350 tot	Ile 335 deg Pro	Asp gga Gly Dgg	
Val egg Arg	Asp aaq Lys	oga Arg tgg Trp 355	caa Glr 340 tcc Ser	tgg Trp caa Gln	tod Ser dag Glr.	att Ile	acc Thr aag Lys 360 gag	Phe tgt Cys 345 cag Glr.	Ala 330 ttc Phe gta Val	Ang atg Met oga Ang	Asp gtc Val caa Gln	Thr gga Gly aag Lys 365 caa	Ser gac Asp 350 tot Ser	Ile 335 cog Pro- gtc Val	Asp gga Gly tgg Trp	105-6

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to: Ser	g gog Ala	n sta Leu	aga Arg 420	Thr	ccg Pro	ttc Phe	aag Lys	agt Ser 425	Val	cat His	tto Phe	gtt Val	gga Gly 430	Tar	gag Glu	129	96
acq Thr	g tot Ser	tta Leu 435	gtt Val	tgg Trp	aaa Lys	Gly Ggg	tat Tyr 440	atg Met	gaa Glu	993 Gly	gcc Ala	ata Ile 445	cga Arg	teg Ser	ggt Gly	134	1 4
ola Gln	i aga i Arg 450	Gly	gct Ala	gca Ala	gaa Glu	gtt Val 455	gtg Val	gct Ala	agc Ser	ctg Leu	gtg Val 460	cca Pro	gca Ala	gca Ala	tag	139	92
-21 -21 -21	1 · 2 ·	11 463 PET Exop	hial	a sp	inife	era											
.:22 -:20 -:32 -:32	11 21	(1).	_fea .(3) a ly:		in I	K:tr <i>l</i>	APAO										
<14 Û	C::	11															
Lys 1	Asp	Asn	Val	Ala 5	Asp	Val	Val	Val	Val 10	Gly	Ala	Gly	Leu	Ser 15	Gly		
Leu	Glu	Thr	Ala 20	Arg	Lys	Val	Gln	Ala 25	Ala	Glγ.	Leu	Ser	Cys 30	Leu	Val		
Leu	Glu	Ala 35	Met	Asp	Arg	Val	Gly 40	Gly	Lys	Thr	Leu	Ser 45	Val	Gln	Ser		
Gly	Pro 50	Gly	Arg	Thr	Thr	Ile 55	Asn	Asp	Leu	Gly	Ala 60	Ala	Trp	Ile	Asn		
Asp 65	Ser	Asn	Gln	Ser	Glu 70	Val	Ser	Arg	Leu	Phe 75	Glu	Arg	Phe	His	Leu 80		
Glu	Gly	Glu	Leu	Gln 85	Arg	Thr	Thr	Gly	Asn 90	Ser	Ile	His	Gln	Ala 95	Gln		
Asp	Gly	Thr	Thr 100	Thr	Thr	Ala	Pro	Tyr 105	Gly	Asp	Ser	Leu	Leu 110	Ser	Glu		

Glu Val Ala Ser Ala Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu 115 120 Ile Glu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Pro Gln Ala Lys 135 140Arg Leu Asp Ser Val Ser Phe Ala His Tyr Cys Glu Lys Glu Leu Asn 155 Leu Pro Ala Val Leu Gly Val Ala Asn Gln fle Thr Arg Ala Leu Leu 170 175 165 Gly Val Glu Ala His Glu Ile Ser Met Leu Phe Leu Thr Asp Tyr Ile 180 185 Lys Ser Ala Thr Gly Leu Ser Asn Ile Phe Ser Asp Lys Lys Asp Gly 200 205 195 Gly Gln Tyr Met Arg Cys Lys Thr Gly Met Gln Ser Ile Cys His Ala Met Ser Lys Glu Leu Val Pro Gly Ser Val His Leu Asn Thr Pro Val 230 235 Ala Glu Ile Glu Gln Ser Ala Ser Gly Cys Thr Val Arg Ser Ala Ser 245 250 Gly Ala Val Phe Arg Ser Lys Lys Val Val Val Ser Leu Pro Thr Thr 260 265 Leu Tyr Pro Thr Leu Thr Phe Ser Pro Pro Leu Pro Ala Glu Lys Gln 275 280 Ala Leu Ala Glu Asn Ser Ile Leu Gly Tyr Tyr Ser Lys Ile Val Phe 290 295 300 Val Trp Asp Lys Pro Trp Trp Arg Glu Gln Gly Phe Ser Gly Val Leu 305 310 315 320 Gln Ser Ser Cys Asp Pro Ile Ser Phe Ala Arg Asp Thr Ser Ile Asp 325 330 Val Asp Arg Gln Trp Ser Ile Thr Cys Phe Met Val Gly Asp Pro Gly

340 345 350

Asp Gln Leu Arg Ala Ala Tyr Glu Asn Ala Gly Ala Gln Val Pro Glu 370 \$375 \$380

Pro Ala Asn Val Leu Glu Ile Glu Trp Ser Lys Gln Gln Tyr Phe Gln 180 390 395 400

Gly Ala Pro Ser Ala Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly
405 410 415

Ser Ala Leu Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu 420 425 430

Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly 435 440 445

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· 210 · 12

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4013 - DNA

<213/ Artificial Sequence

<220>

<223> Primer for cloning into vectors N23256 (Exophiala spinifera)

<400 - 12

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34

<210> 13

-:211.- 34

<212> DNA

<213> Artificial Sequence

<020 >

Primer for cloning into vectors N23056 (Exophiala spinifera)

44000 13

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34

<210> 14

<211> 29

+212 + DNA +2213 + Artificial Sequence	
HARRY Ensigned oligo for 3' RACE, N21965 (Exophiala spinifera)	
्राप्ति 1; त्राप्ति togut acegacaace tigitateee	29
DRITE 15 FREE PARTITION ANTIFICIAL Sequence	
<pre>-0.30.3: Designed oligo for 5' RACE, N21969 (Exophiala spinifera)</pre>	
44.09×10^{16} which together cagacagast totagon	28
<pre>-0.100 1) -0.110 10.73 -0.120 EMA -0.130 Emophiala spinifera -0.200 -0.110 sug_peptide -0.120 (1)(267) -0.130 yeast alpha mating factor secretion signal -0.100 -0.110 cms</pre>	
- 2225 (1)(1662) - 22235	
$<\!4000$ -16 atg aga ttt cet tea att ttt act get gtt tta tte gea gea tee tee Met Arg Phe Pro Ser Ile Phe Thr Ala Val Leu Phe Ala Ala Ser Ser 1 5 10 15	48
gca tha gct gct cca gtc aac act aca aca gaa gat gaa acg gca caa Ala Leu Ala Ala Pro Val Asn Thr Thr Thr Glu Asp Glu Thr Ala Gln 20 25 30	96
at! dog got gaa got gtd atd ggt tad tda gat tta gaa ggg gat ttd Ile Pro Ala Glu Ala Val Ile Gly Tyr Ser Asp Leu Glu Gly Asp Phe 35 40 45	1.1.1
gat get get get teg oca tet tod aad agd ada aat aad ggg eta eeg Asp Val Ala Val Leu Pro Phe Ser Asn Ser Thr Asn Asn Gly Leu Leu 50 55 60	192
tth ata aat act act att god ago att got got aaa gaa gaa ggg gta Phe Ile Asn Thr Thr Ile Ala Ser Ile Ala Ala Lys Glu Glu Gly Val	240

65	7 0	75	80
		tts aaa gac aac gtt Phe Lys Asp Asn Val 95	
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		gtt ont gağ gog atg Val Leu 31. Ala Met 125	
		tog get bod ggb agg Ser Gly Pro Gly Arg 141	
		aat geb agd aad daa Asn Awp Ser Asn Gln 153	
		tty gay ygo gag sto Lei Glu Gly Gli beu 175	
		cas gad ggt aca abd Gln Amp Gly Thr Thr 190	
		gaş gaş git goa agi Glu Glu Val Ala Ser 208	
		otg ato gaa gag bat Leu Ile Glu Glu His 220	
		aag ogg oto gad agt Lys Arg Leu Asp Ser 233	
		aac tig oot get git Asn Deu Pro Ala Val 255	
		oto gqt qtq gaa goo Leu Gly Val Glu Ala 270	
		ato ang agt god acc The Bys Ser Ala Thr 285	
	- · ·	ggo gyg bag tat atg Gly Gly Gln Tyr Met 300	-

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gtt Val	cca Pro	Gly	tca Ser	gtg Val 325	cac His	ctc Leu	aac Asn	acc Thr	aca Pro 330	gtc Val	got Ala	gaa Glu	att Ile	gag Glu 335	Cag Gln	1008
tog Ser	gca Ala	tec Ser	ggc Gly 340	tgt Cys	aca Thr	gta Val	cga Arg	tog Ser 345	ges Ala	tog Ser	gly	gcc Ala	gtg Val 35)	Phe	cga Arg	1956
agc Ser	aaa Lys	aag Lys 355	gtq Val	gtg Val	gtt Val	tcg Ser	tta Leu 360	opg Pro	acı Thr	acc Thr	ttg Deu	tat Tyr 365	aca Pro	acc Thr	ttg Leu	1104
ara Thr	ttt Phe 37)	tga Ser	oda Pro	cct Pro	ctt Leu	ccc Pro 375	gcc Ala	gag Glu	aa j Ly <i>s</i>	caa Gln	gca Ala 380	ttg Leu	gcg Ala	gaa Glu	aat Asn	1152
tet Ser 335	at: Ile	ctg Leu	ggc	tac Tyr	tat Tyr 390	ag: Ser	aag Lys	ata Ile	gts Val	tta Phe 395	gta Val	tgg Trp	gac Asp	aag Lys	ccg Pro 400	1300
tgg Trp	tgy Trp	ege Arg	gaa Glu	caa Gln 405	ggc Gly	ttc Phe	tog Ser	erA ddc	gto Val 410	ctc Leu	caa Gln	tog Ser	ag: Ser	tgt Cys 415	gac Asp	148
ccc Pro	atc Ile	tca Ser	ttt Phe 420	gcc Ala	aga Arg	gat Asp	acc Thr	agc Ser 415	ato Ile	gac Asp	gtc Val	gat Asp	cga Arg 430	caa Gln	tgg Trp	1::96
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cag Gln	tcc Ser 450	aag Lys	cag Gln	gta Val	cga Arg	caa Gln 455	aag Lys	tct Ser	gto Val	tgg Trp	gac Asp 460	caa Gln	ctc Leu	ege Arg	gca Ala	1392
gcc Ala 465	tac Tyr	gag Glu	aac Asn	gcc Ala	999 Gly 470	gcc Ala	caa Gln	gtc Val	cca Pro	gag Glu 475	ccg Pro	gcc Ala	aac Asn	gtg Val	ctc Leu 480	1440
gaa Glu	atc Ile	gag Glu	tgg Trp	tog Ser 485	aag Lys	cag Gln	cag Gln	tat Tyr	ttc Phe 490	caa Gln	gga Gly	gct Ala	ccg Pro	agc Ser 495	gee Ala	1488
gtc Val	tat Tyr	ggg Gly	ctg Leu 500	aac Asn	gat Asp	ctc Leu	atc Ile	aca Thr 505	ctg Leu	ggt Gly	tcg Ser	geg Ala	ctc Leu 510	aga Arg	acg Thr	1536
ccg Pro	ttc Phe	aag Lys 515	agt Ser	gtt Val	cat His	ttc Phe	gtt Val 520	gga Gly	acg Thr	gag Glu	acg Thr	tot Ser 525	tta Leu	gtt Val	tgg Trp	1584

aaa Lys	930 91y 9gg	Tyr	atg Met	gaa Glu	ggg Gly	gcc Ala 535	ata Ile	cga Arg	tog Ser	ggt Gly	caa Gln 540	cga Arg	ggt Gly	gct Ala	gca Ala	1	632
gaa Glu 545	∵al	gtg Val	gct Ala	agc Ser	ctg Leu 550	gtg Val	cca Pro	gca Ala	gca Ala	tag	gcgg	ccg	С			1	673
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-:40	01-	17															
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Ala	Leu	Ala	Ala 20	Pro	Val	Asn	Thr	Thr 25	Thr	Glu	Asp	Glu	Thr 30	Ala	Gln		
Ile	Fro	Ala 35	Glu	Ala	Val	Ile	Gly 40	Tyr	Ser	Asp	Leu	Glu 45	Gly	Asp	Phe		
Asp	Val 50	Ala	Val	Leu	Pro	Phe 55	Ser	Asn	Ser	Thr	Asn 60	Asn	Gly	Leu	Leu		
Phe 65	Ile	Asn	Thr	Thr	Ile 70	Ala	Ser	Ile	Ala	Ala 75	Lys	Glu	Glu	Gly	Val 80		
Ser	Leu	Glu	Lys	Arg 85	Glu	Ala	Glu	Ala	Glu 90	Phe	Lys	Asp	Asrı	Val 95	Ala		
Asp	Val	Val	Val 100	Val	Gly	Ala	Gly	Leu 105	Ser	Gly	Leu	Glu	Thr 110	Ala	Arg		
Lys	Val	Gln 115	Ala	Ala	Glζ.	Leu	Ser 120	Cys	Leu	Val	Leu	Glu 125	Ala	Met	Asp		
Arg	Val 130	Gly	Gly	Lys	Thr	Leu 135	Ser	Val	Gln	Ser	Gly 140	Pro	Gly	Arg	Thr		
Thr 145	Ile	Asn	Asp	Leu	Gly 150	Ala	Ala	Trp	Ile	Asn 155	Asp	Ser	Asn	Gln	Ser 160		

Glu Val Ser Arg Leu Phe Glu Arg Phe His Leu Glu Gly Glu Leu Gln

- Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln Asp Gly Thr Thr Thr 180 135 190
- Thr Ala Pro Tyr Gly Asp Ser Leu Leu Ser Glu Glu Val Ala Ser Ala 195 200 205
- Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu Ile Glu Glu His Ser 210 215 220
- Leu Gln Asp Leu Lys Ala Ser Pro Gln Ala Lys Arg Leu Asp Ser Val 225 230 230 235 235
- Ser Phe Ala His Tyr Cys Glu Lys Glu Leu Asn Leu Pro Ala Val Leu 245 250 255
- Gly Val Ala As
n Gl
n Ile Thr Arg Ala Leu Leu Gly Val Glu Ala His $260 \hspace{1.5cm} 265 \hspace{1.5cm} 270 \hspace{1.5cm}$
- Glu Ile Ser Met Leu Fhe Leu Thr Asp Tyr Ile Lys Ser Ala Thr Gly 275 280 285
- Leu Ser Asn Ile Phe Ser Asp Lys Lys Asp Gly Gly Gln Tyr Met Arg 290 295 300
- Cys Lys Thr Gly Met Gln Ser Ile Cys His Ala Met Ser Lys Glu Leu 305 310 315 320
- Val Pro Gly Ser Val His Leu Asn Thr Pro Val Ala Glu Ile Glu Gln 325 330 335
- Ser Ala Ser Gly Cys Thr Val Arg Ser Ala Ser Gly Ala Val Phe Arg 340 345 350
- Ser Lys Lys Val Val Val Ser Leu Pro Thr Thr Leu Tyr Pro Thr Leu 355 360 365
- Thr Phe Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu Ala Glu Asn 370 375 380
- Ser Ile Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val Trp Asp Lys Pro 385 390 395 400

Trp Trp Arg Glu Gln Gly Phe Ser Gly Val Leu Gln Ser Ser Cys Asp 405 410 Pro Ile Ser Phe Ala Arg Asp Thr Ser Ile Asp Val Asp Arg Gln Trp 425 430 41.0 Ser Ile Thr Cys Phe Met Val Gly Asp Pro Gly Arg Lys Trp Ser Gln 440 435 Gln Ser Lys Gln Val Arq Gln Lys Ser Val Trp Asp Gln Leu Arg Ala 455 Ala Tyr Glu Ash Ala Gly Ala Gln Val Pro Glu Pro Ala Ash Val Leu 470 475 Glu Ile Glu Trp Ser Lys Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala 485 490 Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr 500 505 510 Pro Phe Lys Ser Val His Phe Val Gly Thr Glu Thr Ser Leu Val Trp 515 520 525 Lvs Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala 530 535 540 Glu Val Val Ala Ser Leu Val Pro Ala Ala 545 550 <210 > 18 <D11> 2079
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<pre>%22000 %2210 misc_feature %22120 (688)(690) %2300 Extra lysine</pre>	
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aut oga ott ott tig gaa tat ott gaa gaa aaa tat gaa gag oat tig Thr Arg Leu Leu Glu Tyr Leu Glu Glu Lys Tyr Glu Glu His Leu 20 25 30	96
tat gag ogo gat gaa ggt gat aaa tgg oga aac aaa aag ttt gaa ttg Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys Phe Glu Leu 35 40 45	144
ggt ttg gag ttt occ aat ott oct tat tat att gat ggt gat gtt aaa Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp Gly Asp Val Lys 50 55 60	191
tha aca dag tot atg god atc ata ogt tat ata got gad aag dad aad Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile Ala Asp Lys His Asn 65 70 75 80	240
atg ttg ggt ggt tgt oca aaa gag ogt goa gag att toa atg ott gaa Met Leu Gly Gly Cys Pro Lys Glu Arg Ala Glu Ile Ser Met Leu Glu 85 90 95	288
gga geg gtt ttg gat att aga tac ggt gtt teg aga att gea tat agt Gly Ala Val Leu Asp Ile Arg Tyr Gly Val Ser Arg Ile Ala Tyr Ser 100 105 110	336
aaa gac ttt gaa act stc aaa gtt gat ttt ott agc aag cta oot gaa Lys Asp Phe Glu Thr Leu Lys Val Asp Phe Leu Ser Lys Leu Pro Glu 115 120 125	384
atg otg aaa atg tto gaa gat ogt tta tgt oat aaa aca tat tta aat Met Leu Lys Met Phe Glu Asp Arg Leu Cys His Lys Thr Tyr Leu Asn 130 135 140	432
ggt gat cat gta acc cat cct gac ttc atg ttg tat gac gct ctt gat Gly Asp His Val Thr His Pro Asp Phe Met Leu Tyr Asp Ala Leu Asp 145 150 155 160	480

gtt Val	gtt Val	tta Leu	tac Tyr	atg Met 165	Asp	cca Pro	atg Met	tgc Cys	ctg Leu 170	gat Asp	gcg Ala	ttc Phe	cca Pro	aaa Lys 1 5		523
gtt Val	tgt Cys	ttt Pre	aaa Lys 190	L_{J} 3	arg Arg	att Ile	gaa Glu	got Ala 135	at: Ile	dda Pro	caa Gln	att Ile	gat Asp 130	a…g L;;s	tac Tyr	576
ttg Leu	aaa Lys	tee Ser 195	agc Ser	aa ; Lys	tut Tyr	ata Ile	gca Ala 200	tgg Trp	aat Ero	tig Leu	cag Gln	ggd Gly 205	tg; Trp	Ca a Gln	goo Ala	624
acg Thr	ttt Phe 210	ggt Gly	ggt Gly	ggo Gly	дар А≈р	cat His 215	cat Pro	oca Pro	ааа Lys	teg Ser	gat Asp 220	stg Leu	gtt Val	ang Palo	ogt Arg	67.2
gga Gly 225	tos Ser	oog Pro	gaa Glu	ttc Phe	aaa Lys 230)	gac Asp	aa : Asn	gtt Val	geq Ala	gac Asp 235	gtg Val	gta Val	gtg Val	gtg Val	990 91y 340	72:)
gct Ala	GLY gga	ttg Leu	agc Ser	## GLy 245	ttg Leu	jag Glu	ac; Thr	gca Ala	oga Arq 250	aaa Lys	gtc Val	cag Gln	gcc Ala	gcc Ala 255	ggt GLy	763
ctg Leu	tac Ser	tgc Cys	ctc Leu 260	gtt Val	ott Leu	gag Glu	god Ala	atig Met 265	gat. Asp	egt Arg	gta Val	999 999	gga Gly 270	aag Lys	act Thr	816
ctg Leu	agc Ser	gta Val 275	caa Gln	tog Ser	ggt Gly	doc Pro	ggo Gly 280	agg Arg	acg Thr	act Thr	atc Ile	aac Asn 235	gac Asp	ctc Leu	qqc Gly	864
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gag	aag	gaa	cta	aac	ttg	cct	gct	gtt	ctc	gāc	gta	gca	aac	cag	atc	1200

Glu 385	Lys	Glu	Leu	Asn	Leu 390	Pro	Ala	Val	Leu	Gly 395	Val	Ala	Asn	Gln	Ile 400		
aca Thr	ogo Arg	get Ala	ctg Leu	ctc Leu 405	ggt Gly	gtg Val	gaa Glu	gee Ala	Cac His 410	gag Glu	atc Ile	agc Ser	atg Met	ctt Leu 415	ttt Phe	1	.248
		gac Asp														1	.236
		ada Lys 435														1	.344
		oga Cys														1	.39.1
		acc Phr														1	.440
		tog Ser														1	.48B
		aag Pro														1	.536
		gag Glu 515														1	.584
		ata Ile														1	.632
		ggc Gly														1	.680
		agc Ser														1	.708
		gac Asp														1	.776
		tct Ser 595														1	.824
		gt: Val														1	.872

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ote ate aca oty ggt teg Leu Ile Thr Leu Gly Ser 645		
the gtt gga acg gag acg Phe Val Gly Thr Glu Thr 660	tot ita git igg aaa Ser Leu Val Trp Lys 665	ggg tat atg gaa ggg 2016 Gly Tyr Met Glu Gly 670
joc ata oga tog ggt caa Ala Ile Arg Ser Gly Gln 675	oga ggt get gea gaa Arg Gly Ala Ala Glu 680	gtt gtg gct agc ctg 2064 Val Val Ala Ser Leu 685
gig doa goa goa tag Mal Pro Ala Ala 690		2079
+3210.+ 19 +3211 + 692 +3213 + PRT +3213 + Ur.known		
H220% H223% GST:K:trAPAO 2079	for bacterial expre	ssion (Exophiala spinifera)
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Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys Phe Glu Leu

35 40 45

Gly	Leu	Glu	Phe	Pro	Asn	Leu	Pro	Tyr	Tyr	Ile	Asp	Gly	Asp	Val	Lys
	50					55					60	-			1

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- Met Leu Gly Gly Cys Pro Lys Glu Arg Ala Glu Ile Ser Met Leu Glu 35 90 95
- Gly Ala Val Leu Asp Ile Arg Tyr Gly Val Ser Arg Ile Ala Tyr Ser 100 105 110
- Lys Asp Phe Glu Thr Leu Lys Val Asp Phe Leu Ser Lys Leu Pro Glu 115 120 125
- Met Leu Lys Met Phe Glu Asp Arg Leu Cys His Lys Thr Tyr Leu Asn 130 135 140
- Gly Asp His Val Thr His Pro Asp Phe Met Leu Tyr Asp Ala Leu Asp 145 150 155 160
- Val Val Leu Tyr Met Asp Pro Met Cys Leu Asp Ala Phe Pro Lys Leu 165 170 175
- Val Cys Phe Lys Lys Arg Ile Glu Ala Ile Pro Gln Ile Asp Lys Tyr 180 185 190
- Leu Lys Ser Ser Lys Tyr Ile Ala Trp Pro Leu Gln Gly Trp Gln Ala 195 200 205
- Thr Phe Gly Gly Asp His Pro Pro Lys Ser Asp Leu Val Pro Arg 210 215 220
- Gly Ser Pro Glu Phe Lys Asp Asn Val Ala Asp Val Val Val Val Gly 225 230 235 240
- Ala Gly Leu Ser Gly Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly 245 250 255
- Leu Ser Cys Leu Val Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr $260 \hspace{1.5cm} 265 \hspace{1.5cm} 270 \hspace{1.5cm}$

Leu	Ser	Val 275	Gln	Ser	Gly	Pro	Gly 280		Thr	Thr	Ile	Asn 285		Leu	Gly
Ala	Ala 290	Trp	Ile	Asn	Asp	Ser 295	Asn	Gln	Ser	Glu	Val 300		Arg	Leu	Phe
Glu 305	Arg	Phe	His	Leu	Glu 310	Gly	Glu	Leu	Gln	Arg 315		Thr	Gly	Asn	Ser 320
Ile	His	Gln	Ala	Gln 325	Asp	Gly	Thr	Thr	Thr 330	Thr	Ala	Pro	Tyr	Gly 335	Asp
Ser	Leu	Leu	Ser 340	Glu	Glu	Val	Alá	Ser 345	Ala	Leu	Ala	Glu	Leu 350	Leu	Pro
Val	Trp	Ser 355	Gln	Leu	Ile	Glu	Glu 360	His	Ser	Leu	Gln	Asp 365	Leu	Lys	Ala
Ser	Pro 370	Gln	Ala	Lys	Arg	Leu 375	Asp	Ser	Val	Ser	Phe 380	Ala	His	Tyr	Cys
Glu 385	Lys	Glu	Leu	Asn	Leu 390	Pro	Ala	Val	Leu	Gly 395	Val	Ala	Asn	Gln	Ile 400
Thr	Arg	Ala	Leu	Leu 405	Gly	Val	Glu	Ala	His 410	Glu	Ile	Ser	Met	Leu 415	Phe
Leu	Thr	Asp	Tyr 420	Ile	Lys	Ser	Ala	Thr 425	Gly	Leu	Ser	Asn	Ile 430	Phe	Ser
Asp	Lys	Lys 435	Asp	Gly	Gly	Gln	Tyr 440	Met	Arg	Cys	Lys	Thr 445	Gly	Met	Gln
Ser	Ile 450	Cys	His	Ala	Met:	Ser 455	Lys	Glu	Leu	Val	Pro 460	Gly	Ser	Val	His
Leu 465	Asn	Thr	Pro	Val	Ala 470	Glu	Ile	Glu	Gln	Ser 475	Ala	Ser	Gly	Cys	Thr 480
Val	Arg	Ser	Ala	Ser 485	Gly	Ala	Val	Phe	Arg 490	Ser	Lys	Lys	Val	Val 495	Val

Ser Leu Pro Thr Thr Leu Tyr Pro Thr Leu Thr Phe Ser Pro Pro Leu 500 505 Pro Ala Glu Lys Gln Ala Leu Ala Glu Asn Ser Ile Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val Trp Asp Lys Pro Trp Trp Arg Glu Gln Gly 530 535 540 Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile Ser Phe Ala Arg 550 555 Asp fhr Ser Ile Asp Val Asp Arg Gln Trp Ser Ile Thr Cys Phe Met 565 570 Val Gly Asp Pro Gly Arg Lys Trp Ser Gln Gln Ser Lys Glr. Val Arg 535 Gln Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr Glu Asm Ala Gly 595 600 605 Ala Gin Val Pro Glu Pro Ala Asr. Val Leu Glu Ile Glu Trp Ser Lys 610 615 620 Gln Gln Tyr Phe Gln Gly Ala Prc Ser Ala Val Tyr Gly Leu Asn Asp 6.25 630 635 640 Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe Lys Ser Val His 645 Phe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly 660

Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val Val Ala Ser Leu

680

Val Pro Ala Ala 590

675

<210→ 20

<211> 1464

43121 DNA

<213> Unknown

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4223 + F:trAPAD fusion with barley alpha amylase (Exophiala spinifera)
3000 B
Hammar sig_peptide
\pm (1) \cdot (72)
AMB: Farley alpha amylase signal sequence
· ...1 · misc_feature
(73)..(1464)
-22 - F:trAPAO cDNA
8 J. J. B. S.
-121 · CDS
 22.7 \cdot (1) \dots (1461)
- 2200s
· 121: misc feature
+.0224 - (73)..(75)
- 2232 Added lysine residue
+ 4000 20
atg ged aac aag cad etg ago etc ted etc tte etc gtg etc etc gge
                                                                        48
Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly
                                     10
eto tee ged tee eto ged ago ggd aaa gad aad gtt geg gad gtg gta
                                                                        96
Lou Ser Ala Ser Leu Ala Ser Gly Lys Asp Asn Val Ala Asp Val Val
            20
                                 25
gtg gtg ggc get ggc ttg age ggt ttg gag acg gca ege aaa gte eag
                                                                       144
Val Val Gly Ala Gly Leu Ser Gly Leu Glu Thr Ala Arg Lys Val Gln
        35
                             40
ace gee ggt etg tee tge ete gtt ett gag geg atg gat egt gta ggg
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Ala Ala Gly Leu Ser Cys Leu Val Leu Glu Ala Met Asp Arg Val Gly
aga aag act otg ago gta caa teg ggt eee gge agg aeg act ate aac
                                                                       240
Gly Lys Thr Leu Ser Val Gln Ser Gly Pro Gly Arg Thr Thr Ile Asn
                    70
gae etc ggc gct gcg tgg atc aat gac agc aac caa agc gaa gta toc
                                                                       288
Asp Leu Gly Ala Ala Trp Ile Asn Asp Ser Asn Gln Ser Glu Val Ser
                8.5
aga ttg ttt gaa aga ttt cat ttg gag ggc gag ctc cag agg acg act
                                                                       336
Ang Leu Phe Glu Arg Phe His Leu Glu Gly Glu Leu Gln Arg Thr Thr
            100
                                 105
                                                     110
gga aat toa ato cat caa gca caa gac ggt aca acc act aca gct cct
                                                                       384
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Gly	Asn	Ser 115	Ile	His	Gln	Ala	Gln 120	Asp	Зlу	Thr	Thr	Thr 125	Thr	Ala	Pro	
tat Tyr	ggt Gly 13)	gac Asp	tc: Ser	ttg Leu	ctg Leu	agc Ser 135	gag Glu	gag Glu	gtt Val	gca Ala	agt Ser 140	gca Ala	ctt Leu	gcg Ala	gaa Glu	43.2
ctc Leu 145	ot d Lem	odo Pro	gta Val	tag Trp	tat Ser 150	cag Gln	otg Leu	ato Ile	gaa Glu	gag GLu 155	cat His	agc Ser	ctt Leu	caa Gln	gac Asp 160	430
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aac Asn	caq Gln	atc Ile 195	aca Thr	ege Arg	gct Ala	otg Leu	oto Leu 200	ggt Gly	yty Val	gaa Glu	gco Ala	cac His 205	gag Glu	atc [le	age Ser	624
atg Met	ott Leu 210	ttt Phe	oto Leu	acc Thr	gac Asp	tac Tyr 215	at: Ile	aag Lys	agt Ser	jcc Ala	acc Thr 220	ggt Gly	ctc Leu	agt Ser	aat Asn	67.1
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						ccc Pro										816
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gtg Val	gtg Val 190	gtt Val	tcg Ser	tta Leu	ccg Pro	aca Thr 295	acc Thr	ttg Leu	tat Tyr	ccc Pro	acc Thr 300	ttg Leu	aca Thr	ttt Phe	tca Ser	912
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gaa Glu	caa Gln	ggc Gly	ttc Phe	tcg Ser	ggc Gly	gtc Val	ctc Leu	caa Gln	tog Ser	agc Ser	tạt Cys	gac Asp	ccc Pro	atc Ile	tca Ser	105€

		0.0					54.1					550			
ttt go Phe Al	c aga a Arg 355	gat Asp	acc Thr	agc Ser	atc Ile	gac Asp 360	gto Val	gat Asp	oga Arg	caa Gln	tgg Trp 365	taa Ser	att Ile	acc Thr	1104
tgt tt Cys Ph 37	e Met.	gtc Val	31.4 3da	gac Asp	ccg Pro 375	gga Gly	ogq Arg	aag Lys	tgg Trp	tcc 3er 330	caa Gln	cag Gln	toc Ser	aag Lys	115.
dag gt Gln Va 335	a oga l Ang	caa Gln	aag Lys	tot Ser 390	gtc Val	tgą Trp	дас Азр	caa Gln	ata Leu 395	ege Arg	gca Ala	gdd Ala	tac Tyr	gag Glu 400	1200
aud go Asn Al	o ggg a Gly	gcc Ala	caa Gln 405	gtc Val	cca Pro	gag Glu	adg Pro	gcc Ala 410	aac Asn	gtg Val	eta Leu	gaa Glu	atc Ile 415	gag Glu	1.24 ±
tyg to Trp Se	g aag r Lys	cag Gln 420	cag Gln	tat Tyr	ttc Phe	caa Gln	gga 31y 425	gct Ala	oog Pro	agc Ser	gee Ala	gts Val 430	tat Tyr	Gly aga	1296
oby aa Leu As	c gat n Asp 435	cts Leu	atc Ile	aca Thr	ctg Leu	ggt Gly 440	toq Ser	gcg Ala	oto Leu	aga Arg	acg Thr 445	acq Pro	tta Phe	aag Lys	1344
agt gt Ser Va 45	l His														1390
atg ga Met Gl 465	a ggg u Gly	gcc Ala	ata Ile	cga Arg 470	tog Ser	ggt Gly	caa Gln	cga Arg	ggt Gly 475	gct Ala	gca Ala	gaa Glu	gtt Val	gtg Val 480	1440
got ag Ala Se		-		-	_	tag									1464
<010× <011× <010× <010×	21 487 PRT Unkno	own													
:1020 × <2235	K:tr	APAO	fusi	on w	vith	barl	ey a	ılpha	ı amy	⁄las∈	e (Ex	ophi	.ala	spinife	ra)
<pre></pre>	misc (73) K:tr	(14	64)	A											
<pre>#2205 #221 ≠ #2225 #223 ></pre>	misc (73) Added	(75	5)	resi	due										

•	1	4	0.0	>	2	1

- Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly $\frac{1}{2}$ $\frac{10}{10}$ $\frac{15}{15}$
- Leu Ser Ala Ser Leu Ala Ser Gly Lys Asp Asn Val Ala Asp Val Val 20 25 30
- Val Val Gly Ala Gly Leu Ser Gly Leu Glu Thr Ala Arg Lys Val Gln 35 40 45
- Ala Ala Gly Leu Ser Cys Leu Val Leu Glu Ala Met Asp Arg Val Gly 50 55 60
- Gly Lys Thr Leu Ser Val Gln Ser Gly Pro Gly Arg Thr Thr Ile Asn $\epsilon 5$ 70 75 80
- Asp Leu Gly Ala Ala Trp Ile Asn Asp Ser Asn Gln Ser Glu Val Ser 85 90 95
- Arg Leu Phe Glu Arg Phe His Leu Glu Gly Glu Leu Gln Arg Thr Thr 100 105 110
- Gly Asn Ser Ile His Gln Ala Gln Asp Gly Thr Thr Thr Thr Ala Pro
- Tyr Gly Asp Ser Leu Leu Ser Glu Glu Val Ala Ser Ala Leu Ala Glu 130 135 140
- Leu Lys Ala Ser Pro Gln Ala Lys Arg Leu Asp Ser Val Ser Phe Ala 165 170 175
- His Tyr Cys Glu Lys Glu Leu Asn Leu Pro Ala Val Leu Gly Val Ala 180 185 190
- Asn Gln Ile Thr Arg Ala Leu Leu Gly Val Glu Ala His Glu Ile Ser $195 \hspace{1.5cm} 200 \hspace{1.5cm} 205$
- Met Leu Fhe Leu Thr Asp Tyr Ile Lys Ser Ala Thr Gly Leu Ser Asn 210 215 220

Ile 225	Phe	Ser	Asp	Lys	Lys 230	Asp	Gly	Gly	Gln G	Tyr 235	Met	Arg	Cys	Lys	Thr 240
Gly	Met	Gln	Ser	11e 245	Cys	His	Ala	Met	Ser 250		Glu	Leu	Val	Pro 255	Gly
Ser	V'al	His	Leu 260	Asn	Thr	Pro	Val.	Ala 265		Ile	Glu	Gln	Ser 270	Ala	Ser
Gly	Cys	Thr 275	Val	Arg	Ser	Ala	Ser 280	Gly	Ala	Val	Phe	Arg 285	Ser	Lys	Lys
Val	Val 290	Val	Ser	Leu	Pro	Thr 295	Thr	Leu	Tyr	Pro	Thr 300	Leu	Thr	Ph.e	Ser
Pro 305	Fro	Leu	Pro	Ala	Glu 310	Lys	Gln	Ala	Leu	Ala 315	Gl.u	Asn	Ser	Ile	Leu 320
Gly	Tyr	Tyr	Ser	Lys 325	Ile	Vai	Phe	Val	Trp 330	Asp	Lys	Pro	Trp	Trp 335	Arg
Glu	Gln	Gly	Phe 340	Ser	Gly	Val	Leu	Gln 345	Ser	Ser	Cys	Asp	Pro 350	Ile	Ser
Phe	Ala	Arg 355	Asp	Thr	Ser	Ile	Asp 360	Val.	Asp	Arg	Gln	Trp 365	Ser	Ile	Thr
Cys	Phe 370	Met	Val	Gly	Asp	Pro 375	Gly	Arg	Lys	Trp	Ser 380	Gln	Gln	Ser	Lys
Gln 385	Val	Arg	Gln	Lys	Ser 390	Val	Trp	Asp	Gln	Leu 395	Arg	Ala	Ala	Tyr	Glu 400
Asn	Ala	Gly	Ala	Gln 405	Val	Pro	Glu	Pro	Ala 410	Asn	Val	Leu	Glu	Ile 415	Glu
Trp	Ser	Lys	Gln 420	Gln	Tyr	Phe	Gln	Gly 425	Ala	Pro	Ser	Ala	Val 430	Tyr	Gly
Leu	Asn	Asp	Leu	Ile	Thr	Leu	Gly	Ser	Ala	Leu	Arg	Thr	Pro	Phe	Lys

Ser Val Hi 450	s Fhe Va	l Gly Th 45	r Glu Th	r Ser Lei	ı Val Trp 460) Lys Gly	y Tyr
Met Glu Gl 465	y Ala Il	e Arg Se. 470	r Gly Gli	n Arg Gly 47!		a Glu Val	Vā:1 480
Ala Ser Le	u Val Pro 48.		a				
::310 + 22 ::211 + 180 ::212 + 5MA ::313 + Exo	3 phiala sp	pinifera					
<pre><d100: +221:</d100: </pre>	(1800)						
<pre>+400:- 21 atg gca ct Met Ala Let 1</pre>	t goa cog 1 Ala Pro 5	g ago ta: Ser Ty:	e atc aat Tile Asr	coc cca Pro Pro 10	. aac gtc Asn Val	gcc tcc Ala Ser 15	cca 43 Pro
gea qgg ta Ala Gly Tyr	tot cad Ser His 20	gtc gg: Val Gl;	gta ggc Val Gly 25	c dda gad 7 Pro Asp	gga ggg Gly Gly	agg tat Arg Tyr 30	gtg 96 Val
aca ata got Thr Ile Ala 35	gga caq a Gly Glr	g att gga n Ile Gly	caa gac Gln Asp 40	get teg Ala Ser	ggc gtg Gly Val 45	aca gac Thr Asp	cct 144 Pro
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tac atc gto Tyr Ile Val	gac tac Asp Tyr 85	gee eeg Ala Pro	agc aaa Ser Lys	ctc acc Leu Thr 90	gca att Ala Ile	gga gat Gly Asp 95	GJÀ GGÀ 388
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cca gtg teg Pro Val Ser 115	Ala Leu	tot toa Ser Ser	cct gaa Pro Glu 120	tac ctc Tyr Leu	ttt gag Phe Glu 125	gtt gat Val Asp	gcc 384 Ala
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	130)				135	,				140)				
gts Val 145	. va.	g gtg Val	r gga Gly	: got / Ala	gg = 31 y 15)	Leu	ago Ser	ggt Gly	ttg Leu	gag Glu 155	Thr	g gca Ala	ego Arg	aaa Lys	gtc Val 160	4 3:)
cag Gln	r ged Ala	: gcc : Ala	ggt Gly	ctg Leu 165	. ser	tga Cys	ctc Leu	gtt Val	ott Leu 170	-G1-1	geg A.Ja	j atg Met	gat Asp	cgt Arg 175	gta Val	523
ggg Gly	gga Gly	. aag Lys	act Thr 180	Leu	agc Ser	gta Val	caa Gln	tcg Ser 185	- Gl y	cos Pro	gg : Gl y	: agg / Arg	acg Thr 190	Thr	atc Tle	57 ń
aac Asn	gac Asp	otlo Leu 195	(31 y	gct Ala	gcg Ala	tgg Trp	atc 11e 200	Asn	jac Asp	ags Sem	зас Asn	caa Gln 205	agc Ser	gaa Glu	gta Val	624
toc Ser	aga Arg 210	L∈u	tit ti Phe	gaa Glu	aga Arg	ttt Phe 215	cat His	t tig Leu	gag Glu	age Bly	-jag Glu 220	Leu	cag Gln	agg Arg	aog Thr	602
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gcg Ala	cac His 290	tac Tyr	tgt Cys	gag Glu	aag Lys	gaa Glu 295	cta Leu	aac Asn	ttg Leu	cct Pro	gct Ala 300	gtt Val	ctc Leu	ggc Gly	gta Val	912
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GT. GA	c toa y Sei 370	. Vat.	g cac l His	c cto s Lev	aad Asr	acc Thr 375	Pr:	e gto : Val	e get Ala	t gas a Gl:	a att u Il. 380	e Gl:	g ca; u Gl:	g tod n Ser	g gca r Ala	1152
too Sei 385	- GT	: tgt 7 Cys	aca Thr	agta :Val	a oga Arc 390	j Ser	gc: Ala	e teg a Ser	. 377 i 380	gco 7 Ala 395	a Val	g tte L Phe	e oga e Arq	a ago g Ser	e aaa Lys 4(0	12:00
aaç Lys	g gt: Val	ygtç Val	g gtt Val	tc: Ser 405	Litu	i dag i Pro	aca Thr	a acc	ttig Le¦u 410	Туг	ca: Pre	acc Thr	ttg Leu	aca Thr 415	a ttt Phe	1.248
tida Ser	cca Pro	aat Pro	ctt Leu 420	. Pro	gec Ala	gag Glu	aag Lys	Gla Gln 425	gca Ala	ttig Led	g goç ı Ala	gaa Glu	aat Asn 430	Ser	atc lle	12+6
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cạc Arg	gaa Glu 450	caa Gln	ggc Gly	ttc Phe	tog Ser	ggo Gly 455	gtc Val	cts Leu	caa Gln	tog Ser	ago Ser 460	Cys	gac Asp	ccc Pro	atc Ile	1392
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·::212; PF.T

-:213 - Exophiala spinifera

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Leu Ala Ala Val Gly Ala Thr Ser Asn Asp Val Thr Lys Leu Asn Tyr 65 70 75 30

Tyr Ile Val Asp Tyr Ala Pro Ser Lys Leu Thr Ala Ile Gly Asp Gly 85 90 95

Leu Lys Ala Thr Phe Ala Leu Asp Arg Leu Pro Pro Cys Thr Leu Val 100 105 110

Pro Val Ser Ala Leu Ser Ser Pro Glu Tyr Leu Phe Glu Val Asp Ala 115 120 125

Thr Ala Leu Val Pro Gly His Thr Thr Pro Asp Asm Val Ala Asp Val 130 135 140

Val Val Val Gly Ala Gly Leu Ser Gly Leu Glu Thr Ala Arg Lys Val 145 150 155 160

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Gly Gly Lys Thr Leu Ser Val Gln Ser Gly Pro Gly Arg Thr Thr Ile

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Pro	Tyr	Gly	цεΑ	Ser 245	Leu	leu	Ser	Glu	Glu 250	Val,	Ala	3er	Ala	Leu 255	Ālā
Glu	Leu	Leú	Pro 260	Val	Trp	Ser	Glr.	Leu 265	Ile	Glu	Glu	His	Ser 270	มื⊕น	Glr.
Asp	Leu	175 275	Ala	Ser	Pro	Gln	Ala 280	Lys	Arg	Leu	Asp	3er 285	Val	Ser	Phe
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Ala 305	Asr.	Glr:	Ile	Thr	Arg 310	Ala	Leu	Leu	Gly	Val 315	Glu	Ala	Ніз	Glu	Ile 320
Ser	Met	Leū	Phe	Leu 325	Thr	Asp	Tyr	Ile	Lys 330	Ser	Alā	Thr	Gly	Leu 335	Ser
Asr.	Ile	Phe	Ser 340	Asp	Lys	Lys	Asp	Gly 345	Gly	Gln	Tyr	Met	Arg 350	Cys	Lys
T'hr	Gly	Met 355	Gln	Ser	Ile	Сує	His 360	Ala	Met	Ser	Lγε	Glu 365	Leu	7al	Pro
Gly	Ser 370	Val	His	Leu	Asrı	Thr 375	Pro	Val	Ala	Glu	Ile 380	Glu	Gln	Ser	Ala
Ser 385	Gly	Cys	Thr	Val	Arg 390	Ser	Ala	Ser	Gly	Ala 395	Val	Phe	Arg	Ser	Lγs 4(m)
Lys	Val	Val	Val	Ser 405	Leu	Pro	Thr	Thr	5eu 410	Tyr	Pro	Thr	Leu	Thr 415	Phe

Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu Ala Glu Asn Ser Ile 420 425 Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val Trp Asp Lys Pro Trp Trp 435 440 Arg Gli Gln Gly Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile 455 460 Ger Phe Ala Arg Asp Thr Ser Ile Asp Val Asp Arg Gln Trp Ser Ile 470 475 Thir Cys Phe Met Val Gly Asp Fro Gly Arg Lys Trp Ser Gln Gln Ser 485 490 Lys Glr. Val Arg Gln Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr 500 505 Glu Asr. Ala Gly Ala Gln Val Pro Glu Pro Ala Asn Val Leu Glu Ile 515 520 Glu Trp Ser Lys Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr 53C 535 540 Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe 550 555 Lys Ser Val His Phe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly 565 570 Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val 530 585 Val Ala Ser Leu Val Pro Ala Ala 595 600 <210 > 24 <211> 3003 <312 - DNA 12132 unknown <12201-

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 - 1111 ×
 ...l · misc feature
       (1576)..(1611)
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        spacer sequence
 4 L290 4
 21. 21.
       (1612)..(3000)
 K:trAPAO
× 2700 ×
+231+ CDS
(1)..(3000)
1.231
- 020 -
- 021.
       misc feature
+112 + (161\overline{2}) ... (1614)
· 32: extra lysine
4400> 24
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cts tee ges tee etc ges age ggs get est act gts aag att gat get
                                                                       96
Leu Ser Ala Ser Leu Ala Ser Gly Ala Pro Thr Val Lys Ile Asp Ala
            20
ggg atg gtg gtc ggc acg act act gtc ccc ggc acc act gcg acc
                                                                      14.1
Gly Met Val Val Gly Thr Thr Thr Thr Val Pro Gly Thr Thr Ala Thr
        35
                             40
gto ago gag the tig ggo gtt cet tit ged ged tet eeg aca ega tit
                                                                      192
Val Ser Glu Phe Leu Gly Val Pro Phe Ala Ala Ser Pro Thr Arg Phe
    50
gog cot cot act ogt occ gtg oct tgg toa acg oct ttg caa god act
                                                                      240
Ala Fro Pro Thr Arg Pro Val Pro Trp Ser Thr Pro Leu Gln Ala Thr
goa tat ggt coa goa tgc cot caa caa tto aat tac coc gaa gaa cto
                                                                      288
Ala Tyr Gly Pro Ala Cys Pro Gln Gln Phe Asn Tyr Pro Glu Glu Leu
                85
cat gag att acg atg ged tgg ttd aat aca eeg eec eeg tea get ggt
                                                                      336
Arg Glu Ile Thr Met Ala Trp Phe Asn Thr Pro Pro Pro Ser Ala Gly
```

	100	105	110	
gaa agt gag Glu Ser Glu . 115	gac tge etg aa Asp Cys Leu As	c ctc aac atc n Leu Asn Ile 120	tac gtc cca gga Tyr Val Pro Gly 125	act gag 334 Thr 3lu
aac aca aac a Asn Thr Asn 1 130	aaa goo gto at Lys Ala Val Me 13	t val Trp Ile	the ggt gga geg Tyr Gly Gly Ala 140	ctg gaa 4:2 Leu 31u
tat ggt tgg a Tyr Gly Trp <i>l</i> 145	aat toa tto ca Asn Ser Phe Hi 150	c ctt tac gac s Lau Tyr Asp	gug got agt tto Gly Ala Ser Phe 195	gca gcc 480 Ala Ala 160
aat sag gat ç Asn Gln Asp V	gto ato god gt. Val lle Ala Va 165	g acc atc aac l Inr Ile Asn 170	tac aga acg aac Tyr Arg Thr Asn	att cty 518 Ile Lea 175
ory the fic F	got god oot dad Ala Ala Pro Gli .80	g ett eda ata n Leu Pro Ile 185	aca dag oga aat Thr Gln Ang Asn 190	otg ggg - 576 Leu 31y
tto eta gad o Phe Leu Asp G 195	caa agg ttt got Sin Arg Phe Ala	ttg gat tgg Leu Asp Trp 200	gta dag ogg aac (Val Gln Arg Asn) 205	ate dea — 624 Ile Ala
god ttt ggd g Ala Phe Gly G 210	gt gat oot oga lly Asp Pro Arc 215	Lys Val Thr	ata tit ggg dag a Ile Phe Gly Gln 9 720	agt gog 672 Ser Ala
ggg ggc aga a Gly Gly Arg S 225	gt gto gac gto er Val Asp Val 230	ctc ttg acg Leu Leu Thr	tot atg coa cac a Ser Met Pro His A 235	aac eca 720 Asn Pro 240
cec ttc cga g Fro Phe Arg A	ca gca atc atg la Ala Ile Met 245	gag too ggt Glu Ser Gly 250	gtg get aac tac a Val Ala Asn Tyr <i>F</i> 2	aac ttc 768 Asn Fhe 855
rre mys ory A.	at ttg tcc gaa sp Leu Ser Glu 60	cct tgg aac Pro Trp Asn 265	acc act gtt caa g Thr Thr Val Gln A 270	rct ctc 815 la Leu
aac tgt acc ac Asn Cys Thr Th 275	cc agt atc gac nr Ser Ile Asp	atc ttg agt Ile Leu Ser 280	tgt atg aga aga g Cys Met Arg Arg V 285	tc gat 864 al Asp
ctc gcc act ct Leu Ala Thr Le 290	tg atg aac acg eu Met Asn Thr 295	atc gag caa (Ile Glu Gln :	etc gga ctt ggg t Leu Gly Leu Gly P 300	tt gag 91: he Glu
tac acg ttg ga Tyr Thr Leu As 305	ac aac gta acg sp Asn Val Thr 310	Ala Val Tyr A	egt tet gaa aeg g Arg Ser Glu Thr A 315	ct cgc 960 la Arg 320
acg act ggt ga Thr Thr Gly As	ac att gct cgt sp Ile Ala Arg 325	gta cct gtt o Val Pro Val I 330	etc gtc ggg acg g weu Val Gly Thr V 3.	tg gcc 1008 al Ala 35

aac Asn								939 Gly 345								1056
ot a Leu								eda Pro								110;
gga Gly																111
att Ile 385		-					-	aga Arg		_				-		120
gig Vil																124 ;
tac Tyr					-		_							-		1236
tac Tyr	cac His	agd Ser 435	tot Ser	gaa Glu	gtc Val	ggg Gly	atg Met 440	gtg Val	ttt Phe	ggs Gly	adq Thr	tat Tyr 435	aat Pro	gto Val	gba Ala	1344
agt Ser																1393
tyg Trp 465																1440
gtg Val																1488
gac Asp							-			_	-	-		-		1536
tat Tyr																1584
ago Ser				_	-					-		_	-	_		1632
gta Val 545				_		_			_		_	-	_			1680

						tgc Cys										1728
						gta Vai										1776
						tgg Trp										1324
						tht Phe 615										1272
						caa Glr.										1 +20
						atig Deu										1963
						tat Ser										2.12.6
						dag Gln										11064
						gaa Glu 695										.:112
						got Ala										2160
-						gac Asp									-	2208
						aaa Lys										<u> </u>
		_	-	_		tga Cys		_	_			_		-		2304
						acc Thr 775										2352
tac	ggc	tgt	ada	gta	oga	tcg	gaa	tag	ggc	gee	gtg	tta	сда	age	заа	2400

Ser 785	Gly	Суз	Thr	Val	Arg 730	Ser	Ala	Ser	З1у	Ala 795	Val	Phe	Arg	Ser	Lys gag	
							aca Thr									2448
							aag Lys									24 96
							gto Val 840									3544
							gta Val									.15.9.7
							at: :le									.:640
							acg Pro									.:638
							gto Val									2736
							oca Pro 320									.784
							ttc Phe									U832
							ctg Leu									2880
							adg Thr									2928
							tog Ser									.1976
					cca Pro			taç)	J							3003

```
-0011 · 1000
-0.012 + PRT
+1.113 - ur.known
- 20
1.03      F:trAPAO (Exophiala spinifera)
1.11
....l · misc_feature
1.72 - 73)..(1575)
.... espl mat
41. J. C.
d. The misc feature
-1.72 \cdot -157\overline{\epsilon})...(1611)
die apacer sequence
\cdot_{i,j,k} = (\cdot)_{i,k}
Hall by misc feature
+0.0010 + (1612)..(3000)
Hall Ber EitrAPAO
-111
.D21. misc feature
-3.22. -1612)..(1614)
HUDBY extra lysine
-1400.4 25
Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly
                             10
Leu Ser Ala Ser Leu Ala Ser Gly Ala Pro Thr Val Lys Ile Asp Ala
            20
Gly Met Val Val Gly Thr Thr Thr Thr Val Pro Gly Thr Thr Ala Thr
        35
                             40
                                                 45
Val Ser Glu Phe Leu Gly Val Pro Phe Ala Ala Ser Pro Thr Arg Phe
    50
                         55
Ala Pro Pro Thr Arg Pro Val Pro Trp Ser Thr Pro Leu Gln Ala Thr
                    70
Ala Tyr Gly Pro Ala Cys Pro Gln Gln Phe Asn Tyr Pro Glu Glu Leu
                85 90 95
Arg Glu Ile Thr Met Ala Trp Phe Asn Thr Pro Pro Pro Ser Ala Gly
                                105
```

Glu	Ser	Glu 115	Asp	Cys	Leu	Asn	Leu 120	Asn	Ile	Tyr	Val	Pro 121	Gly	Thr	Glu
Asn	Thr 130	Asrı	Lys	Ala	Val	Met 135	Vāl	Trp	Ile	Tyr	Gly 140	Gly	Ala	Leu	Glu
Tyr 145	Gly	Trp	Asr.	Ser	Phe 150	His	Leu	Tyr	Asp	G. y 155	Alā	Ser	Ph⊕	Ala	Ala 160
Aεn	Glr.	Asp	Vāl	Ile 165	Ala	Wal	Thr	Ile	Asn 170	Tyr	Arq	Thi	Asn	Ile 175	Leu
Gly	Ph∈	Pro	Ala 180	Ala	Pro	Glr.	Leu	Pro 185	Il∈	Thr	Gln	Arq	Asn 190	L∈u	Gly
Ph∈	Leu	Asp 195	Glr.	Arg	Phe	Älä	Leu 200	Asp	Trp	Vāl	Glm	Arq .:01	Asn	Ile	Alā
Alā	Phe 210	Gly	Gly	Asp	Pro	Arg 215	Σγε	Val	Thr	Ile	Phe 220	GLY	Gln	Ser	Alā
G1y 225	Gly	Arg	Ser	Val	Asp 230	Val	Leig	Leu	Thr	Ser 235	Met	Pro	ніз	Asr.	Pro 240
Pro	Phe	Arg	Ala	Ala 245	Ile	Met	Glu	Ser	Gly 250	Val	Ala	Asn	Tyr	Asri 255	Phe
Pro	۲۷,8	Glγ	Asp 260	Leu	Ser	Glu	Pro	Trp 265	Asrı	Thr	Thr	Val	Gln 270	Ala	Leu
Asn	Cys	Thr 275	Thr	Ser	Ile	Asp	Ile 230	Leu	Ser	Суѕ	Met	Arg 285	Arg	Val	Asp
Leu	Ala 290	Thr	Leu	Met	Asn	Thr 295	Ile	Glu	Gln	Leu	Gly 300	Leu	Gly	Phe	Glu
Tyr 305	Thr	Leu	Asp	Asn	Val 31:)	Thr	Ala	Val	Tyr	Arg 315	Ser	Glu	Thr	Ala	Ang 320
Thr	Thr	Gly	Asp	Ile 325	Ala	Arg	Val	Pro	Val 330	Leu	Val	Gly	Thr	Val 335	Al.a
Asn	Asp	Gly	Leu	Leu	Ph⊛	Val	Leu	Gly	Glu	Asn	Asp	Thr	Gln	Ala	Tyr

340	345	350
246	7.47	200

Leu	Glu	G1 u 355	Alá	Ile	Pro	Asn	Gln 360	Pro	Asp	Leu	Tyr	Gln 365	Thr	Leu	Leu
Gly	Ala 370	Tyr	Pro	Ile	Glγ	Ser 375	Pro	Gly	Ile	Gly	Ser 380	Pro	Glr.	Aäp	Gln
Ile 335	Ala	Ala	Ile	Glu	Thr 391	Glu	Va:	Arg	Ph∈	Gln 395	Cys	Pro	Ser	Ala	Ile 400
Vál.	Ala	Gln	qs.	Ser 405	Arq	Asn	Arq	Gly	Il∈ 410	Pro	Ser	'T cp	Arg	Tyr 415	Tyr
Tyr	Asn	Ala	Thr 420	Phe	Glu	Asn	Lient	Glu 425	Leu	Ph↔	Pro	Gly	Ser 431	Glu	Val
Tyr	His	Ser 435	Ser	Glu	Väl	Gly	Ме† 44¢	Val	Phe	Gly	Thir	Туг 445	Pro	Val	Ala
Š⊕r	Ala 450	Thr	Alā	Leu	Glu	Ala 455	Gil.	Thr	Ser	Туз	Tyr 460	M⊖t	Glrı	Gly	Ala
Trp 4 + 5	Ala	Ala	Ph∈	Ala	Lys 470	Asrı	Pro	Met	Asr.	Gly 475	Pro	GLy	Trp	i;'s	Gln 480
Val	Pro	Asn	Val	Ala 485	Ala	Leu	Gly	Ser	Pro 490	Gl;	Lys	Alā	Ile∙	Gln 495	Val
Asp	Val	Ser	Pro 500	Ala	Thr	Ile	Asp	Gln 505	Arg	CAs	Ala	Leu	Tyr 510	Thr	Arg
Tyr	Tyr	Thr 515	Glu	Leu	Gly	Thr	11e 520	Ala	Pro	Ara	Thr	Phe 525	Glγ	Gly	Gly
Ser	Gly 530	Gly	Gly	Ser	Gly	Gly 535	Gly	Ser	Lys	Asp	Asn 540	Val	Ala	Asp	Val
Val 545	Val	Val	Gly	Ala	G1; 550	Leu	Ser	Gly	Leu	Glu 555	Thr	Ala	Arg	Lys	Val 560
Gln	Ala	Ala	Gly	Leu 565	Ser	Cys	Leu	Vāl	Leu 570	Glu	Ala	M∍t	Asp	Arg 575	Val

Gly	Gly	Lys	Thr 580	Leu	Ser	Val	Gln	Ser 585	Gly	Pro	Gly	Arg	Thr 590	Thr	Ile
Asn	Asp	Leu 5 +5	Gly	Ala	Ala	Trp	Ilē 600	Asn	Asp	Ser	Asn	Gln 605	Ser	Glu	Val
Ser	Ard 610	Letu	Phe	Glu	Arg	Phe 615	His	L⊕ū	Gl u	31 у	Glu 620	Leu	Ğln	Arg	Thr
Thr 625	317	A. r.	Ser	Ile	His 63-)	Gln	Aļlā	Gln	Asp	Gly 635	Thr	Thr	Thr	Thr	Ala 640
Pro	Туп	Gly	Asp	Ser 645	Le∵ı	Leu	Ser	Glu	G1:u 65:0	Val	Ala	Ser	Ala	Leu 655	A.l.a
Glu	Lei.	Leu	Pro 660	Väl	Trp	Ser	Glr.	Leu 665	Ile	Glu	Glu	His	3er 670	Leu	Gin
Asp	Lei.	1.78 67.5	Ala	Ser	Pro	Gln	Ala 680	Lys	Arg	Leu	Авр	Ser 685	Val	Ser	Phe
Ala	His 690	Tyr	Cys	Glu	Lys	Glu 695	Leu	Asn	Leu	Pro	Ala 700	Val	Leu	Gly	Val
Ala 705	Ası.	Gln	Ile	Thr	Arg 710	Ala	Leu	Leu	Gly	Val 715	Glu	Ala	His	Glu	Ile 720
Ser	Met	Leu	Phe	Leu 725	Thr	Asp	Tyr	Ile	Lys 730	Ser	Ala	Thr	Gly	Leu 735	Ser
Asn	Ile	Ph:e	Ser 740	Asp	Lys	Lys	Asp.	Gly 745	Gly	Glr.	Tyr	Met	Arg 750	Cys	Lys
Thr	Gly	Met 755	Gln	Ser	Ile	Cys	His 760	Ala	Met	Ser	Lys	Glu 765	Leu	Val	Pro
Gly	Ser 770	Val	His	Leu	Asr.	Thr 775	Pro	Val	Ala	Glu	Ile 780	Glu	Gln	Ser	Ala
Ser 785	Gly	Cys	Thr	Val	Arg 790	Ser	Ala	Ser	Gly	Ala 795	Val	Phe	Arg	Ser	Lys 800

Lys Val Val Val Ser Leu Pro Thr Thr Leu Tyr Pro Thr Leu Thr Phe 819 819 Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu Ala Glu Asn Ser Ile 3.20 325 Lou Gly Tyr Tyr Ser Lys Ile Val Phe Val Trp Asp Lys Pro Trp Trp 840 845 Ang Glu Gln Gly Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile 355 860 Ser The Ala Arg Asp Thr Ser Ile Asp Val Asp Arg Gln Trp Ser Ile ±65 37C 875 880 Thir Cys Phe Met Val Gly Asp Pro Gly Arg Lys Trp Ser Gln Gln Ser 895 395 395 Lys Gln Val Arg Glr. Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr 900 905 910 Glu Ash Ala Gly Ala Gln Val Pro Glu Pro Ala Ash Val Leu Glu Ile 920 +15 Glu Trp Ser Lys Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr 43D 935 940 Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe 945 950 955 Lys Ger Val His Phe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly 965 970 975 Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val 980 985 990 Val Ala Ser Leu Val Pro Ala Ala 995 1000

^{1.110 - 26}

^{1.111 2976}

^{-1212 -} DNA

^{-213 ·} Unknown

```
-01.10%
40.03 - signal:BEST1 mature:spacer:K:trAPAO (Exophiala spinifera)
41. Oak
d...: sig_peptide
      (1)..(72)
4..3 Barley alpha amylase signal sequence
i. . i ·
4..1 mat peptide
Kudi - (73)..(1545)
1... BEST1 mature
1. 11.
Marie misc feature
\pm 1.5.1 \cdot \pm 1546)..(1534)
H. 33 spacer sequence
312200 s
:::Il: misc feature
·IIII. (1535)..(2973)
H:trAPAO
\{(\underline{-},\underline{-}),(\underline{-})\}
·TC1* CDS
4.1.1.1+ (1)..(2973)
- 12:5-
-12.261-
Fili: misc feature
+2225 (1585)..(1587)
+2230 Extra lysine
+ 400> 26
aty god aad aag cad otg ago otd too otd tto otd gtg otd otd ggo
                                                                           48
Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly
                 -20
                                      -15
                                                            -10
eto too goo too eto goo ago ggo aeg gat tit eeg gto ego agg aee
                                                                           96
Leu Ser Ala Ser Leu Ala Ser Gly Thr Asp Phe Pro Val Arg Arg Thr
                                 1
             - Ę.
                              -1
hat sty ggs cag git sag gga sty gos ggg gas gig aig ags itt sgs
                                                                          144
Asp Leu Gly Gln Val Gln Gly Leu Ala Gly Asp Val Met Ser Phe Arg
    10
                                                                          192
aga ata esc tat goa gog sog sog gtg gge ggg etg egt tgg aag eeg
Gly Ile Pro Tyr Ala Ala Pro Pro Val Gly Gly Leu Arg Trp Lys Pro
25
                     3:0
                                           35
                                                                40
ded daa dad god ogg dod tigg gog gigt ogd dod god abb daa titt
                                                                          240
```

Pr↔	Gln	His	Λla	Arg 45	Pro	Trp	Ala	Gly	Val 50	Arg	Pro	Ala	Thr	Gln 55	Phe	
														oto Leu		288
														oag Pro		334
														gga Gly		364
														gaç Glu		431
														aog Tnr 135		48.1
														ada Pro		32h
														stt Sed		376
														oga Arg		624
														ctg Leu		672
														gaa Glu 215		720
														god Ala		765
											-	-		gac Asp		816
														agg Arg		864
														gtg Val		912

265	270	275	230
		gog gg; dag otg gog Ala Gly Gln Leu Ala 29:	
ogg gto otg ato gga Arg Val Leu ile Sly 300	add aat god gad Thr Ash Ala Asp 308	gaa gg oogo goo tto Glo Gly Arg Ala Phe 310	ata agg 1008 Sel Gly
		tac cas god tat otg Tyr Glm Ala Tyr Leu 315	
		gog gos tgo tat dod Ala Ala Cys Tyr Pro 340	
		gog ograto tto ggo Ala Ar: He Phe Gly 357	
		tog gas gog ott gtg Ser Glu Ala Deu Val 370	-
		aac ggt aat acc gag Asn Gly Asn Thr Glu 390	
		att dor tad gtt ttd Ile Pro Tyr Val Phe 405	
		gat tgg cog coc gag Asp Trp Pro Pro Glu 420	
		ctg atg tec tec god Leu Met Ser Ser Ala 435	
		ggg gan god ott acc Gly Asp Als Leu Thr 450	
		aca tto ggt coc gag Thr Pho Gly Pro Glu 470	
		ate sen set tyd gog Ile Pro Pro Cys Ala 485	
		gga ggo ago ggo gga Gly Gly Ser Gly Gly 500	

aaa gad aab gt Lys Asp Asn Va 505						ı Ser G	
tig gag acg go Leu Glu Thr Al				i Gly Deu			
ott gag gog st Leu Glu Ala Me 54	t Asp Ac;					. Gln S	
ggt pac gga ag Gly Pro Gly Ar 555			Asp Let				
gac ago aao ba Aap Ser Asn Gl 570					Arg Phe		
gag ggo gag bt Glu Gly Glu De 588						. Ala G	
gac ggt aca at Asp Gly Thr Th	o Thr Thr 605	Ala Pro	Tyr Gly 61:	· Asp Ser :	Let Let	i 3er Gi 615	lů
gag gtt goa ag Glu Val Ala Se 62	c Ala Leu					Gln Le	9 <u>7</u>
ato gaa gag da Ile Glu Glu Hi 635	s Ser Leu	Gln Asp 640	Leu Lys	: Ala Ser	Pro Gir 645	ı Ala L	/s
egg oto gad ag Arg Leu Asp Se 650					Lys Glo		STI.
ttg est get gt Leu Pro Ala Va 665						Leu I	
ggt gtg gaa go Gly Val Glu Al	a His Glu		-	: Phe Leu	_		
	685						
aag agt god ad Lys Ser Ala Tn 70	o ggt oto r Gly Leu					Asp G	

						сса Pro 735										0304
						gda Ala										.126.2
						aaa Lys										2400
						ttt Phe										440
						ato Ile										. 4 9 6
						tgg Trp 815										544
						at: Ile										. 5 96
						att Ile										2640
						tod Ser										0688
•			-	-	-	tad Tyr					-		-			2736
						ato Ile 395										2784
	-	-	-	-	-	tat Tyr	-	-		-				_		2832
						tto Phe										<u>1880</u>
						Gly Gga										2928
caa	сра	ggt	gst	gca	gaa	gtt	gtg	gct	ago	ctg	gtạ	cca	gca	gda	tag	2976

Gln Arg Gly Ala Ala 3lu Val Val Ala Ser Leu Val Pro Ala Ala 955 960 965

-0:10° 27 -0:11 991

CHIL PRT
CHILD Unknown

*.1. (1 ·

%.h. v signal:BEST1 mature:spacer:K:trAPAO (Exophiala spinifera)

-1.1

Hill: misd_feature
Hill: (1546)...(1534)
Hill: spacer sequence

1.1.1.11

H.M.1 misd_feature
H.M.1 (1585)..(2973)

-Milit K:trAPAO

+1,1,11

HUD1+ misd_feature HUD0+ (1585)..(1587) HUD3+ Extra lysine

-1400 - 27

Met Ala Asn Lys His Leu Ser Leu Ser Leu Phe Leu Val Leu Leu Gly -20 -15 -10

Asp Leu Gly Gln Val Gln Gly Leu Ala Gly Asp Val Met Ser Phe Arg 10 15 20

Gly Ile Pro Tyr Ala Ala Pro Pro Val Gly Gly Leu Arg Trp Lys Pro 25 30 35 40

Pro Gln His Ala Arg Pro Trp Ala Gly Val Arg Pro Ala Thr Gln Phe 45 50 55

Gly Ser Asp Cys Phe Gly Ala Ala Tyr Leu Arg Lys Gly Ser Leu Ala 60 65 70

Pro Gly Val Ser Glu Asp Cys Leu Tyr Leu Asn Val Trp Ala Pro Ser 75 80 85

Gly	Ala 90	Lys	Pro	Gly	Gln	Tyr 95	Pro	Val	Met	Val	Trp 100	Val	Tyr	Gly	Gl7
Gl; 10	Phe	Ala	Gly	Gly	Thr 110	Ala	Alā	Met	Pre	Tyr 115	Tyr	Asp	Gly	Glo	Ala 120
Le.	Ala	Arg	Glı.	Gly 125	Val	Val	Val	Val	Thr 131	Phe	A:sr.	Tyr	Arg	Thr 133	ńsr.
Ιlω	Leu	Gly	Ph€ 14+	Phe	Ala	His	Pro	Gly 145	Let	Ser	Arç	Glu	Ser 150	Pro	Thr
Gly	Thr	Ser 155	Gl;	Asr.	Tyr	Gly	Leu 160	Leu	Asp	Il:	Leu	Ala 165	Ala	Leu	Ārģ
Trp	Vāl 170	Gla	3er	Asr.	Ala	Arg 175	Alá	:¹h€	Gly	Gly	Asp 180	2ro	Gly	Arç	Wâ.
Th: 18%	Val	Phe	Gly	Glu	Ser 190	Ala	Gly	Ala	Ser	Ala 195	I1e	Gly	Leu	Leu	Deu 200
Thi	Ser	Pro	Leu	Ser 205	Lys	Gly	Leu	Phe	Arg 210	Gly	Alâ	Ile	L€u	Glu 215	Ser
Pro	Gly	⊥ั⊖น	Thi 220	Arq	Pro	heu	Alà	"nr 225	i.eu	Ala	Asp	Ser	Ala 230	Ala	Ser
Gly	Glu	Arg 235	≟⁄∋น	Asp	Ala	Asp	Leu 240	Ser	Arg	Lei:	Arg	Ser 245	Thr	Asp	Pro
Ala	Thr 250	Leu	Met	Ala	Arg	Ala 255	Asp	λla	Ala	Arq	Prc 260	Alā	Ser	Arg	Asp
Leu 265	Arg	Arg	Pro	Arq	Pro 270	Thr	Gly	Prc	lle	Val. 275	Asp	Gly	His	Val	Leu 280
Pro	Gln	Thr	Asp	3er 285	Ala	Alâ	Ilé	Ala	Ala 290	Gly	Gln	Leu	Ala	Pro 295	Val
Arg	Val	Leu	11 300	Gly	Thr	Asrı	Ala	Asp 305	Glu	Gly	Arg	Ala	Phe 310	Leu	Gly
Arg	Ala	Pro	Met	Glu	Thr	Pro	Ala	Asp	Tyr	Gln	Ala	Tyr	Leu	Glu	Ala

315	320	325

Gln	Phe 330	Gly	Asp	Gln	Ala	Ala 335	Al a	Val	Ala	Ala	Cys 340	Туг	Pro	Leu	Asp
Gly 345	Arg	Ala	Thr	Pro	Lys 350	Glu	Met	Val	Ala	Arg 355	Ile	Phe	Gly	Asp	Asri 360
Gln	Phe	Asn	Arg	Gly 365	Val	Ser	Ala	Ph⊕	3er 370	Gl.	Ala	Leu	Val	Ard 37!	Glm
Gly	Alā	Pro	Val 380	Trp	Arq	Tyr	Glr.	Phe 385	Asn	Gly	Asn	Thr	Glu 390	Gly	G17
Arg	Ala	Pro 395	Alā	Fhi	His	Gly	Ala 400	Glu	Ile	Pro	Туг	Val 405	2he	Gly	Val
Phe	Lys 410	Leu	Asp	G1u	Leu	Gly 41!	Lev.	Ph⊕	Asp	Trp	Pro 420	Pro	Glu	Gly	Pro
Thr 425	Pro	Ala	Asp	Arg	Ala 430	≟el.	Gly	Glr:	Leu	Met 435	Ser	Ser	Ala	Trp,	Val 440
Arg	Phe	Ala	Lys	Asn 445	Gìy	Aap	Pro	Ala	Gly 450	Asp	Alā	Leu	Thr	Trp. 45!	Pro
Ala	Туг	Ser	Thr 460	Gl;	Lys	Ser	Thr	Met 465	Thr	₽he	Gly	Pro	Gl·1 470	Gly	Arg
Ala	Alâ	Val 475	Val	Ser	Pro	Gly	Pro 480	Ser	Il∈	Pro	Pro	Cys 485	Ala	Asp	Gly
Ala	Lys 490	Ala	Gly	Glÿ	Gly	Gly 495	Ser	Gly	Glγ	Gly	Ser 500	Gly	Gly	Gly	Ser
Lys 505	Asp	Asn	Val	Ala	Asp 510	Val	Val	Val	Vā.l	Gly 515	Ala	Gly	Leu	3er	Gly 520
Leu	Glu	Thr	Ala	Arg 525	Lys	Val	Glr	Alā	Ala 530	Gly	Leu	Ser	Суз	Leu 535	Val
Leu	Glu	Ala	M⊖t 540	Asp	Arg	Val	Gly	Gly 545	Lys	Thr	Leu	Jer	Val 550	Gln	Ser

Gly	Pro	Gly 555	Arg	Thr	Thr	Ile	Asn 560	Asp	Leu	Gly	Ala	Ala 565	Trp	Ile	Asn
Asp	Ser 570	Asn	Gln	Ser	Glu	Val 575	Ser	Arg	Leu	Phe	Glu 590	Arg	Phe	His	Leu
Glu 385	Gly	·31 u	Leu	Gln	Arg 590	Thr	Thr	Gly	Asn	3er 595	lle	H:s	Glr.	Ala	Gln 600
Asp	Gly	Thr	Thr	Thr 605	Thr	Alâ	Pro	Туг	Gly 610	Aεp	Ser	Led	Leu	Ser 615	Glu
Glu	Val	Ala	Ser 620	Ala	Leu	Ala	Glu	Leu 625	Leu	Pro	Val	Trp	3er 630	Glr.	Leu
Ile	Glu	31/u 635	His	Ser	Leu	Gln	Asp 640	Leu	Lys	Ala	Ser	Pro 645	Glr.	Ala	Lys
Arg	1eu 650	Asp	Ser	Val	Ser	Phe 655	Ala	His	Tyr	Cys	Glu 660	Lys	Glu	Leu	Asn
Leu 665	Pro	Ala	Val	Leu	Gly 670	Val	Ala	Asn	Glr:	I.l∈ 675	Thr	Arg	Ala	Leu	Leu 680
Gly	Vāl	Glu	Ala	His 685	Glu	Ile	Ser	M∙et.	Leu 690	Ph∈	Leu	Thr	Asp	Tyr 695	Ile
Lys	Ser	Ala	Thr 700	Gly	Leu	Ser	Asn	Ile 705	Phe	Ser	Asp	Lys	Lys 710	Asp	Gly
Gly	Glrı	Tyr 715	Met	Arg	Сув	Lys	Thr 720	Gly	Met	Gln	Ser	Ile 725	Сув	His	Ala
Met	Ser 730	Lys	Glu	Leu	Val	Pro 735	Gly	Ser	Vāl	His	Leu 740	Asn	Thr	Pro	Val
Ala 745	Glu	Ile	Glu	Glrı	Ser 750	Ala	Ser	Gly	Суз	Thr 755	Val	Arg	Ser	Alā	Ser 760
Gly	Ala	Val	Phe	Arg 765	Ser	Lys	Lys	Val	Val 77≬	Val	Ser	Leu	Pro	Thr 775	Thr

Leu Tyr Pro Thr Leu Thr Phe Ser Pro Pro Leu Pro Ala Glu Lys Glr 780 785 790	1
Ala Leu Ala Glu Asn Ser Ile Leu Gly Tyr Tyr Ser Lys Ile Val Phe 795 - 300 - 865	25
Val Trp Asp Lys Pro Trp Trp Arg Glu Gln Gly Phe Ser Gly Val Let °10 815 £20	1
Gln Mer Ser Cys Asp Pro Ile Ser Phe Ala Arg Asp Thr Ser Ile Asp 235 330 335 540	
Val Asp Arg Gln Trp Ser Ile Thr Cya Phe Met Val Gly Asp Pro Gly 845 850 855	7
Arg Lys Trp Ser Gln Gln Ser Lys Gln Val Arg Gln Lys Ser Val Trp 860 - 865 - 870)
Asp Gln Leu Arg Ala Ala Tyr Glu Asr Ala Gly Ala Gln Val Pro Glu 875 - 380 - 385	7
Pro Ala Asr. Val Leu Glu Ile Glu Trp Ser Lys Gln Gin Tyr Phe Glr 890 895 900	
Gly Ala Pro Ser Ala Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly 905 910 915 920	
Ser Ala Leu Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu 925 930 935	1
Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly 940 945 950	7
Gin Arg Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala 955 960 965	
#110 > 28 #111 + 3618 #1212 + DNA +1113 + Unknown	
+220 + discontinuo di	

```
·(330)~
kadala cos
\{1,2,\dots,\{1\}\}...\{3615\}
A. 1. 1. 1
misc_feature
-11...(637)
d.'.. ga + polyl.nker
-(.). DE
-Ch. No mat_peptide
+1.1.11 - (e \times \overline{3}) ... (21 + 1)
Hills: esp1 mat
·(1.1.1.
H.... mind feature
\pm 1.155 \pm 1.191)..(2..6)
Handb spacer sequence
*1....t., e
Fig. 1: mind feature
\pm 2.119 - (13.2\overline{7})...(3615)
HLLLS R:trAPAO
1.
%1221  misc_feature
%2000  (2227)..(2209)
HUUSH extra lysine
714000 28
atg too cot ata ofa ggt tat tgg aaa att aag ggc oft gtg baa
                                                                               45
Met Ser Fro Ile Leu Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln
                  -.1.15
                                          -220
                                                                  -215
doc act oga off off ttg gaa tat off gaa gaa aaa tat gaa gag
                                                                               90
Pro Thr Ang Leu Leu Glu Tyr Leu Glu Glu Lys Tyr Glu Glu
                  -.110
                                          -205
cat tig tat gad cool gat gaa ggt gat aaa ligd cga aac aaa aag
                                                                              135
His Leu Tyr Glu Ard Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys
                  -1.45
                                          -190
                                                                  -185
tit gaa tig ggt tig gag tit ood aat dit oot tat tat att gat
Phe Glu Neu Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp
                                                                              180
                  -1.80
                                          -175
                                                                  -170
gut gat git ada tia laca dag tot atg god lato ata ogt tat ata
                                                                              225
Gly Asp Val Lys Lea Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile
                  -165
                                          -160
got gad aag dad aad atg ttg ggt ggt tgt dda aaa gag dgt gda
                                                                              270
```

Ala	Asp	Lys	His	Asn -150		Lei	ı 31 ₃	/ 3ly	7 Cys		ro Ly	ys Gl	lu Ai	-	la 140	
		tea Ser	_	ott Lew -135	Glu					ı As	at at sp Il			yr 31		315
				дов Ala -120	Тут					e G.				ys Va		3.60
					Leu					נון ג				li As	at cgt sp Arg 95	
				apa Thr												45·6
				gad Asp												50;
				tta Phe												5 5.3
				att Ile												600
				gg: Gly -25												648
				ctq Leu								Phe				696
				get Ala												744
				acc Thr												792
				ttt Phe 40												849
				act Thr			-									888
				ctc Leu												936

7	7 @		75		80)		
		ggt gaa agt Sly Glu Ser 90						934
		gag aas asa Glu Asn Inr 105						1032
	Ala Leu d	gāa tat ggt Hu Tyr Gly .20					p Ĝly	1080
		god aat dag Ala Asn Gln						112:
Arg Thr A		etg ggg tte seu Gly Pne				u Pro II.		1176
		igg ttb sta Bly Phe Deu 170						122;
		ica god titi Ala Ala Phe 188						1272
	Gln Ser A	aca gaga aga Ala Gly Gly .00					r Ser	1320
		dea dee tte Pro Pro Phe						1368
Ala Asn T		ito dod aaq Phe Pro Dys				eo Trp As		1416
		oto aad tgt Jeu Asn Cys 250	Thr Thr					1464
		gat oto goo Asp Leu Ala 265	-	-	_			1513
	Gly Phe C	gag tad adg Glu Tyr Thr 180					r Arg	1560
		ogo aog aot Arg Thr Thr		_	-	-		1606

		acg Thr 310														1555
		Cáá Gln														17764
		āct Thr														175.2
		caa Glm														150)
		tot Ser														1540
		ogo Arg 390														1836
		too Ser														1944
		act Pro														1995,
Tyr	Met	caq Glr.	Gly	Ala 4;0	Trp	Ala	Ala	Ph⊕	Ala 445	Lys	Asr.	Pro	Met	Asn 450	Gly	.104Û
Pro	Gly	tgą Trp	Lys 455	Gln	Val	Pro	Asr:	Val 460	Aìa	Ala	Leu	Gly	3er 465	Pro	Gly	2088
Lys	Ala	atc Ile 470	Glr.	Val	Asp	Val	Ser 475	Pro	Ala	Thr	110	Asp 480	Glr.	Arg	Cys	2136
	ttg	tac														2184
	Leu 485					490					495				·	
ada	485 ttt	Tyr gga Gly	gga	gac	ago	490 ggc	gga	gge	agc	gga	495 gga	gge	agit	aaa	gac	2.23.2

					cag Gln											Ü323
					ggg Gly											.:378
					aac Asn											.1424
					t da Ser 135											.147.2
					act Thr											. E 2 ·
					ast Pro											. 56%
					gaa Glu											.616
					gac Asp											_664
					gog Ala 665											. 712
					gca Ala											2760
-	-				agc Ser	-					-			~	_	0808
					aat Asr.											2856
					aca Thr											1904
					ggc Gly 745											2952
att	gag	cag	tcg	gca	tee	ggo	tgt	aca	gta	cga	teg	goo	tag	ggc	gee	3000

Ile	Glu	Gln	Ser	Ala 760	Ser	Gly	Cys	Thr	Val 765	Arg	Ser	Ala	Ser	Gly 770	Ala		
					aag Lys											304	8
					tida Ser											3,09	6
					ctg Leu											314	;
					ege Arg 815	-									_	319	2
					tda Ser											324	i)
					add Thr											308	H
					aag Lys											3,53	5
					gag Glu											338	.1
			_		gag Glu 905		_	-	-	-					_	343	2
					ela aaa							_		_		348	()
					aag Lys											352	8
					tat Tyr											357	6
	-	-	_	-	gtg Val	-	-	_				**	tag			361	8

<210> 29

```
-0.711 1205
< 1.12 + - PRT
41. 134 Unknown
-1, <u>Dú</u>, -
1.136 quit:esp1:sp:K:trAPAO (Exophiala spinifera)
-C. 200-
40.050 gat + poly!inker
-12.269
H. Hill mass feature
\pm 1.021 \pm 0.013\overline{1})...(2026)
d. 1180 spaper sequence
+(__2)(d)+
Addition mass feature
H. U23- (1027)..(3615)
Hand Hand
(1) (1) (1) (1)
H2010 mis8_feature
H3.20 (2027)..(2029)
+01.30 extra lysine
-:4000 29
Met Ser Pro Ile Leu Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln
              -225
                       -0.20 +0.15
Pro Thr Arg Leu Leu Glu Tyr Leu Glu Glu Lys Tyr Glu Glu
              -210 -005
His Leu Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys
               -195
                                 -130
                                                     -185
Phe Glu Leu Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp
               -160
                                                    -170
Gly Asp Val Lys Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile
              -165
                               -160
                                                    -155
Ala Asp Lys His Asn Met Leu Gly Gly Cys Pro Lys Glu Arg Ala
              -150
                              -145 -140
Glu Ile Ser Met Leu Glu Gly Ala Val Leu Asp Ile Arg Tyr Gly
               -135
                                 -130 -125
```

Val Ser Arg Ile Ala Tyr Ser Lys Asp Phe Glu Thr Leu Lys Val -120 -115 -110 Asp Phe Leu Ser Lys Leu Pro Glu Met Leu Lys Met Phe Glu Asp Arg -105 -10C -95 Leu Cys His Lys Thr Tyr Leu Asn Gly Asp His Val Thr His Pro Asp -90 -35 -80 Phe Met Leu Tyr Asp Ala Leu Asp Val Val Leu Tyr Met Asp Pro Met Cys Leu Asp Ala Phe Pro Lys Leu Val Cys Phe Lys Lys Ard Ile Glu Ala Ile Pro Glm Ile Asp Lys Tyr Let Lys Ser Ser Lys Tyr Ile Ala Trp Pro Leu Gln Gly Trp Gln Ala Thr Phe Gly Gly Gly Asp His Pro -25Pro Lys Ser Asp Leu Val Pro Arg Gly Ser Pro Glu Phe Ala Pro Thr -10 Val Lys Ile Asp Ala Gly Met Val Val Gly Thr Thr Thr Thr Val Pro Gly Thr Thr Ala Thr Val Ser Glu Phe Leu Gly Val Pro Phe Ala Ala 20 25 30 35 Ser Pro Thr Arg Phe Ala Pro Pro Thr Arg Pro Val Pro Trp Ser Thr 40 45 Pro Lou Gln Ala Thr Ala Tyr Gly Pro Ala Cys Pro Gln Gln Phe Asn Tyr Pro Glu Glu Leu Arg Glu Ile Thr Met Ala Trp Phe Asr. Thr Pro 75 70 Pro Pro Ser Ala Gly Glu Ser Glu Asp Cys Leu Asn Leu Asn Ile Tyr

Val Pro Gly Thr Glu Asn Thr Asn Lys Ala Val Met Val Trp Ile Tyr

90

100					105					11:					115
Gly	Gly	Ala	Leu	Glu 123	Tyr	Gly	Trp	Asn	Ser 125	Ph⊕	His	Leu	Tyr	Asp 130	Gly
Ala	Ser	Phe	Ala 135	Alā	Asn	Gln	Asp	Val 140	Ile	Alā	Va]	Thr	11e 145	Asr.	Tyr
Arg	Thr	Asn 150	Ile	Le.,	Gly	Phe	Pro 15:	Alā	Ala	Pro	Gln	Leu 160	Pro	∶le	'Thr
Gln	Arg 165	Asn	Leu	Glÿ	Phe	Беп 170	Asp	Glr.	Arg	Phe	Ala 175	Leu	Asp	":rrp	Val
Gln 130	Arg	Asn	Ile	Ala	Ala 185	Ph.e	31;/	Gly	Asp	Pro 190	Arg	Lys	Val	Thr	Ile 195
?he	Glγ.	Gln	Ser	Ala 200	Gly	Gly	Arq	Ser	Val 205	Asp	Val	Leu	Leu	Th.r .:10	Ser
Met	Pro	His	Asn 215	Pro	Pro	Phe	Arc	Al,a 220	Ala	Ile	Met	Glu	Ser 225	1317.	Val
Ala	Asr:	Tyr 230	Asn	Phe	Pro	Lys	Gly 235	Asp	Leu	Ser	Glu	Pro 240	Trp	Asr.	Thr
Thr	Val 245	Gln	Ala	Leu	Asn	Cys 250	Thr	Thr	Ser	Ilė	Asp 255	Ile	Leu	Ser	Cys
Met 260	Arg	Arg	Val	Asp	Leu 265	Ala	Thr	Leu	Met	Asr. 270	Thr	Ile	Glu	Glr.	Leu 275
Gly	Leu	Gly	Phe	Glu 280	Tyr	Thr	Leu	Азр	Asn 235	Val	™hr	Ala	Val	Tyr 290	Arg
Ser	Glu	Thr	Ala 295	Arg	Thr	Th.r	Gly	Asp 300	Ile	Ala	Arg	Val	Pro- 308	Val	Leu
Val	Gly	Thr 310	Val	Ala	Asrı	Asp	31; 315	Leu	Leu	Ph⊕	Val	Leu 320	Gly	Glu	Asn

Asp Thr Gln Ala Tyr Leu Glı Glu Ala Ile Pro Asn Gln Pro Asp Leu 325 330 330

Tyr (340	3ln	Thr	Leu	Leu	Gly 345	Ala	Tyr	Pro	Ile	31y 350	Ser	Pro	Gly	Ile	Gly 355
S⇔r !	Pro	Gln	Asp	Gln 360	Ιl€·	Ala	Ala	Il€	Glu 365	Thr	Glu	Val	Arg	Phe 370	Gln
Cys !	Pro	Ser	Ala 375	Ile	Val	Ala	Gln	Asp 381	Ser	Ārç	Asn	Arg	31y 385	Il÷	Pro
Ser 1	Prp	Arg 390	Tyr	Гуг	Tyr	Asn	Ala 395	Thr	Phe	Glu	Asn	Leu 401	Glu	Leu	Phe
Pro 0	31 ₃ 403	3er	Glu	Val	Tyr	His 410	Ser	Ser	Glu	Vāl	Gly 415	Met	Val	Phe	Gl;
Tl.r 7 41.0	ŢŸĭ	Pro	Vāl	Alliā	Ser 425	Ala	Th.r	Ala	Leu	Glu 430	Ala	Glm	ľh:	Ser	ъу. 43⊕
Tyr I	1et	Gln	Gly	Ala 440	Trp	Ala	Ala	E'hæ	Ala 445	Ъув	Asn	Pro	Met	Asr. 450	Gl;
Pro (Эly	Trp	Lys 455	Glm	Väl	Pro	Asn	Val 460	Ala	Ala	Leu	Gly	Ser 465	Pro	Gl;
Lys A		470					475					480			_
	485					490					495				
Thr 1 500					505					510					515
Asn '				520					525					530	
Thr A			535					540					545		
Ala i	Met	Asp 550	Arg	Val	Glγ	Gly	Lys 555	Thr	Leu	Ser	Val	Gln 560	Ser	Gly	Pro

Gly	Arg 565	Thr	Thr	Ile	Asrı	Asp 570	Leu	Gly	Ala	Ala	Trp 575	Ile	Asn	Asp	Ser
Asn 580	Gln	Ser	Glu	Val	Ser 585	Arg	Leu	Ph€	Glu	Arg 590	Ph∈	His	Leu	3lt.	31 y 595
Glu	Leu	Gln	Arg	Thr 600	'I'hr	Gly	Asn	3er	Ile 6)5	His	Glm	Ala	Gln	Asp 610	Gly
Thr	Thr	Thr	Thr 615	Ala	Pro	Туг	Gly	Asp 620	Ser	Leu	Leu	Ser	Glu 625	Glu	Val
Ala	Ser	Ala 630	Leu	Alā	Glu	Leu	Leu 635	Pro	Val	Trp	Ser	Glr. 640	Leu	Ile	Glu
Glu	His 645	Ser	Seu	Gln	Asp	1eu 650	lys	Ala	Ser	Pro	Glr. 655	Ala	Lys	Arq	Leu
Asp 660	Ser	Vāl	Ser	Ph.e	Ala 665	His	Tyr	Сув	Glu	Lya 670	Glu	Leu	Asn	Leu	Pro 675
Ala	Val	L⊕u	Gly	Val 680	Ala	Asr.	Gln	Ile	Thr 685	Arg	Ala	Leu	Leu	Gly 690	Val
Glu	Ala	His	Glu 695	Ile	Ser	Met	Leu	Ph∈ 700	Leu	Thr	Asp	Tyr	Ile 705	ùγs	Ser
Ala	Thr	Gly 710	Leu	Ser	Asn	Ide	Phe 715	Ser	Asp	Ly $arepsilon$	Lys	Asp 720	Gly	Gly	Gln
Tyr	Met 725	Arg	Cys	Lys	Thr	Gly 730	Met	Glrı	Ser	Ile	Cys 735	His	Ala	Met	Ser
Lys 740	Glu	Leu	Val	Pro	Gly 745	Ser	Val	His	Leu	Asn 750	Th.r	Pro	Val	Ala	Glu 755
Ile	Glu	Gln	Ser	Ala 760	Ser	Gly	Cys	Thr	Val 765	Arg	Ser	Ala	Ser	Gly 770	Ala
Val	Phe	Arg	Ser 775	Lys	Lys	Val	Val	Val 780	Ser	Leu	Pro	Thr	Thr 785	Leu	Tyr

Pro Thr Leu Thr Phe Ser Pro Pro Leu Pro Ala Glu Lys 31n Ala Leu 790 795 800

Ala Glu Asn Ser Ile Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val Trp 305 310 315

Asp Lys Pro Trp Trp Arg Glu Gln Gly Phe Ser Gly Val Leu Gln Ser

Ser Cys Asp Pro Ile Ser Phe Ala Arg Asp Thr Ser Ile Asp Val Asp 840 840 850

Ard Glr Trp Ser Ile Thr Cys Phe Met Val Gly Asp Pro Gly Arg Lys 855 - 365

Trp Ser Gln Gln Ser Lys Gln Val Arg Gln Lys Ser Val Trp Asp Gln 870 881

Let Arg Ala Ala Tyr Glu Asn Ala Gly Ala Glr Val Pro Glu Pro Ala 985 895

Ash Val Leu Glu Ile Glu Trp Ser Lys Gln Glr Tyr Phe Glr Gly Ala 900 905 910 915

Pro Ser Ala Val Tyr Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala 920 925 930

beu Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu Thr Ser 935 940 945

Leu Val. Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg 950 955 960

Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala 965 970 975

^{-210 - 30}

^{-211 - 3591}

^{-1212 -} DNA

^{-213 -} Unknown

^{· 2.10} s

^{-:2233 ·} Orf of BEST1:K:trAPAO fusion pGEX-4T-1 (Exophiala spinifera)

⁻¹²²⁰⁻

<pre>0221 misc_feature 0221 mi</pre>			
Tudio mat_peptide Tudio mat_peptide Tudio 6888)(2168			
<pre>chine chile misc_featire chile (2164)(218 chile spacer seque</pre>	19)		
<pre>clic+ dl+ m.sc_feature dl+ (.210)(358 ds+ K:hrAPAO</pre>			
00.00 + 00.00 + CDU 00.00 + (1+(3586 00.05 +			
-220 - -221 - misc_feature -222 - (2400)(220 -223 - extra lysine	2)		
04000 30 Atg too opt ata ota Met Ser Ero Ile Leu +22	Gly Tyr Trp		
eed Act ega ett ett Pro Thr Arg Leu Leu -21	. Leu Glu Tyr		
cat itg tat gag ogd His Leu Tyr Glu Arg -19	Asp Glu Gly		
ttt qaa ttg ggt ttg Phe Glu Leu Gly Leu -18	. Glu Phe Pro		
ggt dat gtt aaa tta Gly Asp Val Lys Leu -16	. Thr Gln Ser	e ata egt tat e Ile Arg Tyr	
got qad asg dad aad Ala Asp Lys His Asn			

	-150	-145	-140
gag att toa atg Glu Ile Ser Met	ott gaa gga gog gtt Leu Glu Gly Ala Val -135	ttg gat att aga tac Leu Asp Ile Arg Tyr -130	ggt 315 Gly -175
	gea tat agt asa gac Ala Tyr Ser Lys Asp -120		
	aag ota oot gaa atg Lys Leu Pro Glu Met -175		
	aca tat tta aat ggt o The Tye Leu Ash Sly A -85		
	gar get ott gat gtt (Asp Ala Seu Asp Val 1 -70		
	tto dos asa tts gtt t Phe Pro Eys Leu Val (-58		
	att gat aag tac ttg (Ile Asp Lys Tyr Leu : -4(
	ggo tgg caa goo acg t Gly Trp Gln Ala Thr I -25	Phe Gly Gly Gly Asp H	
	ctg gtt dog ogt gga t Leu Val Pro Arg Gly 2 -3		
	acc gat ctg ggc cag (Thr Asp Leu Gly Gln V 10		
	ogo gga ata ooo tat g Arg Giy Ile Pro Tyr A 25		
	dog doc daa dad god (Pro Pro Gln His Ala) 40	Arg Pro Trp Ala Gly V	
	ttt gge tee gae tge t Phe Gly Ser Asp Cys (60		
	god dod ggd gtg agd (Ala Pro Gly Val Ser (75		

										atg Met		984
										pad Pro		1632
										103 Thr 133		1080
										ota Leu		112+
										изр Изр		1176
										чээ Glү		1224
										ago Ser		1270
										ogt Arg 210		1820
										ctc Leu		1368
-	-	-	-	_	 	_	-			oga Arg		1416
										qoo Ala	-	1464
									-	atc Ile	-	1912
										фод Ala 290		1560
										gaa Glu		1608

ogo Arg	goc Ala	ttc Phe 310	ct: Leu	31À ààà	ogc Arg	gog Ala	cog Pro 315	atg Met	gag Glu	acg Thr	oda Pro	gog Ala 320	gac Asp	tac Tyr	caa Gln	1556
		ctg Leu														1704
		aca Pro														105.1
		gge														1 (0)
		gtg Val														1843
		gag Glu 390														1÷36
		tta Phe														1944
		gag Glu														1990
		god Ala														2040
		acc Thr														2188
		gag Glu 470														2136
		gog Ala														.1184
		gga Gly														.1.2.3.1
		ttg Leu														J <u>2</u> 80
ctg	tcc	tga	ctc	gtt	ctt	gag	gog	atj	gat	cạt	gta	999	gga	aag	act	2323

Leu	Ser	Суз	Leu 535	Val	Leu	Glu	Ala	Met 540	Asp	Arg	Val	Glγ	31 y 54 %	Lys	Thr	
		gta Val 050														2376
		Trp Trp														3424
		ttt Præ														247.3
		caa Gln														.:52 (
		atg Leu														3564
		tat Ser 630														2616
		cag Gln													-	2664
		gaa Glu														1711.
		get Ala														.:760
		gac Asp														2808
	_	аза Буз 710	-			_			_	_					-	.:856
		tgo Cys														.:904
		acc Thr														.:952
		tog Ser														3000

	760	765	770
	and ttg tat cod The Leu Tyr Pro	2	
	caa goa ttg gog Gin Ala Leo Ala 791	Glu Asn Ser Ile	
	tto gta tgg gas Pne Val Trp Asp 810		
	oto daa tog ago Leu Gln Ser Ser 825		
	gao gto gat oga Asp Val Asp Arg 840		
	gga ogg aag tgg Gly Arg Lys Trp		
	tgg gac caa ctc Trp Asp Gln Leu 878	Arg Ala Ala Tyr	
	gag cog god aad Glu Pro Ala Asn 890		
	daa gga got cog Gln Gly Ala Pro 905		
	ggt tog gog oto Gly Ser Ala Leu 920		
	gag acg tot tta Glu Thr Ser Leu		
	ggt caa cga ggt Gly Gln Arg Gly 955	Ala Ala Glu Val	
ytg oca gca gca Val Pro Ala Ala 965	tag		3591

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HALL PRT
-1213 - Unknown
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-00256 Orf of BEST1:K:trAPAO fusion pGEX-4T-1 (Exophiala spinifera)
11.
-1.1 misc feature
d..... (1,...(6€7)
∵. w gs: + polylinker
. . . 11,
.... misc feature
(2.164)..(2199)
More spacer sequence
11
-7.11 misc_feature
32... (220\overline{0})..(3538)
Hi: rAPAO
32.03
W1.10 musc feature
+0.116 + (2000) ... (2002)
extra lysine
31
Met Ser Pro Ile Lou Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln
             -0.25
Pro Thr Arg Leu Leu Glu Tyr Leu Glu Glu Lys Tyr Glu Glu
            -010
                                            -200
His Leu Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys
             -195 -196 -185
Pho Glu Leu Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp
             -130 -175 -170
Gly Asp Val Lys Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile
             -165 -160 -155
Ala Asp Lys His Asn Met Leu Gly Gly Cys Pro Lys Glu Arg Ala
             -150
                    -145
                                      -140
Glu Ile Ser Met Leu Glu Gly Ala Val Leu Asp Ile Arg Tyr Gly
            -135
Val Ser Arg Ile Ala Tyr Ser Lys Asp Phe Glu Thr Leu Lys Val
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- Asp Phe Leu Ser Lys Leu Pro Glu Met Leu Lys Met Phe Glu Asp Arg -105 -100 -95
- Leu Cys His Lys Thr Tyr Leu Asn Gly Asp His Val Thr His Pro Asp -90 -85 -80
- Cys Leu Asp Ala Phe Pro Lys Leu Val Cys Phe Lys Lys Arg Ile Glu -60 -55 -50
- Ala Ile Pro Gln Ile Asp Lys Tyr Leu Lys Ser Ser Lys Tyr Ile Ala -45 -35 -36
- Trp Pro Leu Gln Gly Trp Gln Ala Thr Phe Gly Gly Gly Asp His Pro -20 -20 -15
- Pro Lys Ser Asp Leu Val Pro Arg Gly Ser Pro Glu Phe Thr Asp Phe -10 -5 -1 1
- Pro Val Arg Arg Thr Asp Leu Gly Gln Val Gln Gly Leu Ala Gly Asp 5 10 15
- Val Met Ser Phe Arg Gly Ile Pro Tyr Ala Ala Pro Pro Val Gly Gly 20 25 30 30
- Leu Arg Trp Lys Prc Pro Gln His Ala Arg Pro Trp Ala Gly Val Arg 40 45 50
- Pro Ala Thr Gln Phe Gly Ser Asp Cys Phe Gly Ala Ala Tyr Leu Arg 55 60 65
- Lys Gly Ser Leu Ala Pro Gly Val Ser Glu Asp Cys Leu Tyr Leu Asn 70 75 80
- Val Trp Ala Pro Ser Gly Ala Lys Pro Gly Gln Tyr Pro Val Met Val 85
- Trp Val Tyr Gly Gly Gly Phe Ala Gly Gly Thr Ala Ala Met Pro Tyr 100 $$ 105 $$ 110 $$ 115

Tyr	Asp	Gly	Glu	Ala 120	Leu	Ala	Arg	Gln	Gly 125	Val	Val	Val	Val	Thr 130	Phe
Asn	Туг	Arg	Thr 135	Asr.	Ile	Leu	Gly	Phe 140	₽he	Ala	His	Pro	Gly 145	L∈u	Ser
Arg	Glu.	Ser 150	Pro	Thr	Gly	Thr	3er 155	Gly	Asr.	Tyr	Gly	Leu 160	Leu	Asp	Ile
Leu	Ala 165	Ala	Leu	Ārģ	Trp	Val 170	Gln	Ser	Asr.	Ala	Arg 17:	Ala	Phe	Gly	Gly
Asp 180	Рхо	Gly	Arg	Val	Thr 185	Val	Phe	Gly	Glu	Ser 190	Ala	Gly	Ala	Ser	Ala 195
Il∈	Gly	Leu	Leu	Leu 200	Thr	Зег	Pro	Leu	3er 205	Lуз	Glγ	Leu	Phe	Arg 210	Gly
Ala	Ile	Leu	Glu 215	Ser	Pro	Gly	Leu	Thr 220	Arg	Pro	Leu	Ala	Thr 225	≟∈น	Ala
Asp	Ser	Ala 230	Ala	Ser	Gly	Glu	Ang 235	Leu	Asp	Ala	Asp	Leu 240	Ser	Arģ	Leu
Arg	Ser 245	Thr	Asp	Pro	Ala	Thr 250	Leu	Met	Alā	Arg	Ala 255	Азр	Ala	Ala	Arg
Pro 260	Ala	Ser	Arg	Asp	Leu 265	Arg	Arg	Pro	Arg	Pro 270	Thr	Gly	Pro	Ile	Val 275
Asp	Gly	His	Val	Leu 280	Pro	Gln	Th.r	Asp	Ser 285	Ala	Alā	Ile	Alā	Ala 290	Gly
Gln	Leu	Ala	Pro 295	Val	Arg	Val	Leu	Ile 300	Gly	Thr	Asrı	Ala	Asp 305	Glu	Gly
Arg	Ala	Phe 310	Leu	Gly	Arg	Alâ	Pro 315	Met	Glu	Thr	Pro	Ala 320	Asp	Tyr	Gln
Ala	Tyr 325	Leu	Glu	Ala	Gln	Phe 330	Gly	Asp	Gln	Ala	Ala 335	Ala	Val	Ala	Ala

Cys 340	Tyr	Pro	Leu	Asp	Gly 345	Arg	Ala	Thr	Pro	Lys 350	Glu	Met	Val	Ala	Arg 355
I.l.e	Phe	З1ү	Asp	Asr: 360	G.rı	Phe	Asn	Arg	31y 365	Vā l	Ser	Ala	Phe	Ser 370	Glu
Alā	Leu	Val	Arg 375	Glr:	GY	Ala	Pro	Val 380	Trp	Arg	Tyr	Gln	2he 385	Asrı	Gly
Aan	Thr	Glu 390	Gly	Gly	Arg	Ala	Pro 395	Ala	Thr	His	Зlу	Ala 400	Glu	Ile	Pro
Tyr	Val 405	Phe	Gly	Val	Ph€	1уз 410	Leu	Asp	Glu	Leu	Gly 415	Leu	Phe	Asp	Trp
420		Glu			42.5					430		·			435
		Ala		440					445		-			450	•
		'Ihr	455					460					465		
		Glu 470					475					480			
	485	Alá				490					495				
500		Gly			505					510					515
		Lea		520					525					530	
		Суг	535					540					545	-	
Leu	Ser	Val. 550	Gln	Ser	Gly	Pro	Gly 555	Arg	Thr	Thr	Ile	Asn 560	Asp	Leu	Gly

Ala	Ala 565	Trp	Ile	Asn	Asp	Ser 570	Asn	Gln	Ser	Glu	Val 575	Ser	Arq	Leu	Phe
Glu 580	Arg	Ph∈	His	Leu	31 u 58 5	Gly	Glu	Leu	Gln	Arg 590	Thr	Thr	317	Asn	Ser 595
Ile	Ніз	Glm	Ala	Gln 600	Азр	Gly	Thr	Thr	Thr 605	Гhr	Ala	Pro	Ту:	Gly 610	Asp
Ser	Leu	Leu	Ser 615	Glu	Glu	Val	Ala	Ser 620	Ala	Leu	Alā	Glu	Leu 625	Leu	Pro
Vāl	Trp	Ser 630	Glr.	Leu	Ile	Glu	Glu 635	Ris	Ser	Leu	Gln	Азр 640	Leu	Lys	Ala
Ser	Pro 645	Glr.	Alâ	Lys	Arģ	1eu 650	qaA	Ser	Väl	Ser	Phe 655	Ala	Ні.:	Tyr	Cys
Glu 660	$\mathrm{L}\gamma s$	Glu	Leu	Asn	16u 565	Pro	Ala	Vāl	Leu	Gly 670	Val	Ala	Asn	Gin	Ile 675
Thr	Arg	Ala	Leu	Leu 680	Gly	Val	Glu	Alā	His 685	Glu	Ile	Ser	Ме*	Leu 640	Phe
Leu	Th.r	Asp	Tyr 695	Ile	Σÿε	Ser	Ala	Thr 700	Gly	Leu	Ser	Asn	11e 70f	Plie	Ser
Asp	Lys	Lys 710	Asp	Gly	Gly	Gln	Tyr 715	Met	Arg	Cys	Lys	Thr 720	Gly	Met	Gln
Ser	Ile 725	Cys	His	Ala	Met	Ser 730	Lys	Glu	Leu	Val	Pro 735	Gly	Ser	Val	His
Leu 740	Asn	Thr	Pro	Val	Ala 745	Glu	Ile	Glu	Gln	Ser 750	Ala	Ser	GlŢ	Cys	Thr 755
Val	Arg	Ser	Ala	Ser 760	Gly	Ala	Val	Phe	Arg 765	Ser	Lys	Lys	Val	Val 770	Val
Ser	Leu	Pro	Thr 775	Thr	Leu	Tyr	Pro	Thr 780	Leu	Thr	Phe	Ser	Pro 785	P1.0	Leu
Pro	Ala	Glu	Lys	Gln	Ala	Leu	Ala	Glu	Asn	Ser	Ile	Leu	Gly	T;/r	Tyr

790 795 800

Ser Lys Ile Val Phe Val Trp Asp Lys Pro Trp Trp Arg Glu Gln Gly 805 810 810

Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile Ser Phe Ala Arg 935 836 836 835

AMP Thr Ser Ile Asp Val Asp Arg Gln Trp Ser Ile Thr Cys Phe Met 340 845 350

Mai Gly Asp Pro Gly Arg Lys Trp Ser Gln Gln Ser Lys Gln Val Arg 855 860 865

Gln Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr Glu Asn Ala Gly 875 875

Ala Gln Val Pro Glu Pro Ala Asn Val Leu Glu Ile Glu Trp Ser Lys 885 890 895

Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr Gly Leu Asn Asp 900 905 910 915

Lou Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe Lys Ser Val His 920 925 930

Fhe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly 935 940 945

Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val Val Ala Ser Leu 950 955 960

Val Pro Ala Ala 965

· 1310 · 31

<211 · 1803

-212 DNA

+313> Unknown

. 5000

+1223 · Glyc(-) mutation in glycosylation sites (Exophiala spinifera)

- 320 -

÷221 - CDS

·1.121		(+) •	. 1.	, ,													
1 * 3		32 ctt Leu														18	
		tat Tyr														Э́ю	
		got Ala 35														144	
		gag Glu														193	
		gda Ala														240	
		gto Val														233	
		gat Ala														336	
		tog Ser 115														384	
		otg Leu														433	
		gtg Val														480	
		god Ala														523	
		aag Lys														576	
		ata Leu 195														624	
tcc	aga	ttg	ttt	gaa	aga	ttt	cat	ttg	gag	वृद्ध	gag	ata	cag	а д-д	asg	b72	

<pre

| Ser | Arg
210 | Litu | Phe | Glu | Arg | Phe
215 | His | Leu | Glu | Glγ | Glu
220 | Leu | Gln | Arg | Thr | |
|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|-------------------|------------|------------|-------------------|-------|
| act
Thr
225 | gga
Gly | aat
Asn | tca
Ser | atc
Ile | cat
His
230 | caa
Gln | gca
Ala | caa
Gln | Jac
Asp | ggt
Gly
235 | aca
Inr | acc
Thr | act
Thr | aca
Thr | got
Ala
340 | 72) |
| | | | | | | | | | | | | agt
Ser | | | | " ő ? |
| | | | | | | | | | | | | cat
His | | | | - 1 6 |
| | | | | | | | | | | | | agt
Ser
235 | | | | 2 64 |
| | | | | | | | | | | | | gtt
Val | | | | +13 |
| | | | | | | | | | | | | gcc
Ala | | | | 110 |
| | | | | | | | | | | | | acc
Thr | | | | 1004 |
| | | | | | | | | | | | | atg
Met | | | | 1056 |
| | | | | | | | | | | | | gaa
Glu
365 | | | | 1104 |
| | | | | | | | | | | | | gag
Glu | | | | 1153 |
| | | | | | | | | | | | | tto
Phe | | | | 1100 |
| | | | | | | | | | | | | acc
Thr | | | | 1.34% |
| | | | | | | | | | | | | gaa
Glu | | | | 10.96 |
| | | | | | | | | | | | | aag
Lys | | | | 1344 |

| 435 | 440 | 4 - | 45 | |
|---|-----------------|----------------------|----------------------|------------|
| ogo gaa caa ggo tto
Arg Glu Gln Gly Phe
450 | | | | 1392 |
| toa tit god aga gat
Jer Phe Ala Arg Asp
405 | | | | 1440 |
| ase tgt tte atg gts
Thr Dys Phe Met Val
485 | | | | 1438 |
| aag dag gta ogs das
Dys Gln Val Arg Gln
500 | | Asp Gln Leu A | | 1536 |
| qag aad goo ggg goo
Gru Ash Ala Sly Ala
515 | | . Pro Ala Asn V | | 1584 |
| qaq tqq tqq aaq qaq
Glu Trp Ser Dys Gln
530 | | | | 1632 |
| ogg otg aac gat ot:
Gly Leu Asn Asp Leu
545 | | | | 1680 |
| aag agt gtt dat ttr
Lys Ser Val His Phe
565 | | | | 1728 |
| tat atg gaa ggg god
Tyr Met Glu Gly Ala
530 | | Gln Arg Gly Al | | 1776 |
| gtg get age etg gtg
Val Ala Ser Leu Val
595 | | | | 1803 |
| + 010 + 33
+ 211 + 600
+ 012 + PRT
+ 013 + Unknown | | | | |
| | mutation in gl | ycosylation sit | tes (Exophiala | spinifera) |
| -:400 → 33 | | | | |
| Met Ala Leu Ala Pro
1 5 | Ser Tyr Ile Asr | Pro Pro Asn Va
10 | al Ala Ser Pro
15 | |

| Ala | Glγ | Tyr | 3er
20 | His | Val | Gly | Val | Gly
25 | Pro | Asp | Gly | Gly | Arg
30 | Tyr | Val |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|--------------|------------|------------|------------|
| Thr | I 1 · a | Ala
35 | Gly | Glr. | Ile | Gly | Gln
40 | Asp | Alá | Ser | 31 y | Val
45 | Thr | Asp | Pro |
| Ala | Tyr
50 | Glu | Lys | Glr. | Val | Ala
55 | Gln | Alā | Phe | Alā | As:.
60 | Leiu | Arg | Ala | Cys |
| Leu
65 | Ala | Ala | 7al | Gly | Ala
70 | Thr | Ser | Aan | Asp | Val
75 | Th: | Lys | Leu | Asr. | Tyr
£0 |
| Гуг | Il÷ | Val | As p | Tyr
85 | Ala | Pro | Ser | lys | Leu
90 | rh.: | Alā | I.e | Gly | Asp
95 | С., γ |
| Leu | Lys | Ala | Thr
100 | Phe | Ala | Leu | Азр | Arg
105 | Leu | Pro | Pro | Cys | Thr
110 | Leu | Väl |
| Pro | Vāl | Ser
115 | Alā | Leu | Ser | Ser | Pro
120 | Glu | Туr | lew | Ph∈ | G. u
1. 5 | Val | Азр | A. a |
| Thr | Ala
130 | Leu | Val | Pro | Gly | His
135 | Thr | Thr | Pro | Asp | Asr.
140 | Val | Ala | Азр | Val |
| Val
145 | Val | Vāl | Gly | Ala | Gly
150 | Leu | Ser | Gly | Leu | Glu
155 | Thr | Ala | Arg | Lys | Val
160 |
| Gln | Alā | Ala | Gly | Leu
165 | Ser | Cys | Leu | Vāl | Leu
170 | Glu | Ala | Met | Asp | Arg
175 | Val |
| Gly | Gly | Lys | Thr
180 | Leu | Ser | Val | Gln | Ser
185 | Gly | Pro | Glÿ | A::g | Thr
190 | Thr | Tle |
| Asn | Asp | Leu
195 | Gly | Ala | Ala | Trp | Ile
200 | Asn | Asp | Ser | Asn | Gin
205 | Ala | Glu | Val |
| Ser | Arg
210 | Leu | Ph∈ | Glu | Arg | Phe
215 | His | Leu | Glu | Gly | Glu
220 | Leu | Gln | Arg | Thr |
| Thr
225 | Gly | Asn | Ser | Ile | His
230 | Gln | Ala | Gln | Asr- | 31.y
235 | Thr | Thr | Thr | Thr | Ala
240 |

Pro Tyr Gly Asp Ser Leu Leu Ser Glu Glu Val Ala Ser Ala Leu Ala

245 250 255

| Glu | Leu | Leu | Pro | Val | Trp | Ser | Gln | Leu | I1e | Glu | Glu | His | Ser | Leu | Gln |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 260 | | | | | 265 | | | | | 270 | | |

- Asp Leu Lys Ala Ser Pro Gln Ala Lys Arg Leu Asp Ser Val Ser Phe 275 280 285
- Ala His Tyr Cys Glu Lys Glu Leu Asn Leu Pro Ala Val Leu Gly Val 290 295 300
- Ala Asn Gln Ile Thr Arg Ala Leu Leu Gly Val Glu Ala His Glu Ile 305 310 315
- Ser Met Leu Fhe Leu Thr Asp Tyr Ile Lys Ser Ala Thr Gly Leu Ser 325 330 335
- Asn Ile Phe Ser Asp Lys Lys Asp Gly Gly Gln Tyr Met Arg Cys Lys 340 345 350
- Thr Gly Met Gln Ser Ile Cys His Ala Met Ser Lys Glu Leu Val Pro 355 360 365
- Gly Ser Val His Leu Asn Thr Pro Val Ala Glu Ile Glu Gln Ser Ala 370 375 380
- Ser Gly Cys Thr Val Arg Ser Ala Ser Gly Ala Val Phe Arg Ser Lys 395 390 395
- Lys Val Val Val Ser Leu Pro Thr Thr Leu Tyr Pro Thr Leu Thr Phe 405 410 415
- Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu Ala Glu Asn Ser Ile 420 425 430
- Arg Glu Gln Gly Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile 450 460
- Ser Phe Ala Arg Asp Thr Ser Ile Asp Val Asp Arg Gln Trp Ser Ile 465 470 475 480

Thr Cys Phe Met Val Gly Asp Pro Gly Arg Lys Trp Ser Gln Gln Ser 485 Lys Gln Val Arg Gln Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr 505 Glu Asn Ala Gly Ala Gln Val Pro Glu Pro Ala Asn Val Leu Glu Ile 515 520 Glu Trp Ser Lys Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr 535 540 Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe 545 550 Lys Ser Val His Phe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly 570 Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val 580 585 Val Ala Ser Leu Val Pro Ala Ala 595 • 210> 34 <011> 37 <012> DNA <213> Artificial Sequence <220> <223> 37-mer oligonucleotide (Exophiala spinifera) <400> 34 ggggaattca tggcacttgc accgagctac atcaatc 37 <210> 35 <211> 1929 <312> DNA <213> Exophiala spinifera <2200> <221. Intron <222> (739)..(811) <2..3> <220>

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| gangetetgg gogegadaga ebbagootad gagaaabagg tegoobaagd attogobaat | 130 |
| objegagott goottgotgo agttggagoo tottbaaaaog abgtbabbaa gotbaattab | 240 |
| tacatogogy aptacgoppo gagoaaacto accgoaattg gagatgggot gaagtotacc | 3.10 |
| titigosotty adaggetose teottydaeg otggtgesag taceggeett ggotteadet | 360 |
| gaatacotot tigaggitga tgosacggog otggigosag gasastogae ossagasaac | 4.11 |
| gttgoggaeg tggtagtggt gggogotggo ttgageggtt tggagaogge abgoaaagte | $\zeta_{1}^{*} \leftarrow [0]$ |
| caggoogoog gtotgtootg cotogttott gaggogatgg atogtgtagg gggaaagact | 540 |
| obgagogtas aatogggtos oggoaggaog actatoaasg acctoggogo tgogtggato | 660 |
| aatgacagca accaaagcga agtatocaga ttgtttgaaa gatttcattt ggagggogag | $\mathcal{C}(\mathbf{v}_{t})])$ |
| etecagagga egaeoggaaa tteaateeat caageacaag aeggtacaae castacaget | 7. 3 |
| cottatggty actoscogyt aagsasaate scastttyty atgagasete tytogagtyt | 780 |
| agaatacagt cactgactoc acttogtoca gotgagogag gaggttgcaa gtgcacttgc | 840 |
| ggaactooto coogtatggt otcagotgat ogaagagtat agoottgaag accocaaggo | 900 |
| gageceteag gegaagegge tegacagtgt gagettegeg caetactgtg agaaggaeet | 960 |
| aaacttgoot gotgttotoa gogtggoaaa ooagatoaca ogogototgo toggtgtgga | 10.00 |
| agoccaogag atcagoatgo tttttotoac ogactacato aagagtgoca coggtotoag | 10%0 |
| taatattgto toggadaaga aagaoggogg goagtatatg ogatgoaaaa baggtgogtg | 1140 |
| oggigiosts toaggiaggy gastogitts thagiggisa tissaggiat goagtegati | 1200 |
| tgocatgoca tgtcaaagga acttgttoca ggotcagtgo acctcaacac occogtogot | 1260 |
| ggaattgage agtoggogto oggotgtata gtaogatogg ootogggogo ogtgttooga | 13.10 |
| agcaaaaagg tggtggttto gttaccgaca acattgtato ccaccttgac attttcacca | 1350 |
| cotottocog cogagaagoa agoattggog gaaaaatota tootoggota otatagoaag | 1440 |
| atagtetteg tatgggaeaa esegtggtgg egegaasaag getteteggg egteeteeaa | 1500 |
| togagotgtg accocatoto atttgocaga gataccagoa togaagtoga toggoaatgg | 1960 |

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oogstcaagt	gtgttcattt	cgttggaacg	gagacgtctt	tagtttggaa	agggtatatg	1850
gaaggggcca	tacgatcggg	tcaacgaggt	gctgcagaag	ttgtggctag	cctggtgcca	1920
gbagbatag						1929

·1210 · 36

-1211- 60:0

· 2121 PRT

-:213: Exophilia spinifera

44000 3h

Met Ala Leu Ala Pro Ser Tyr Ile Asn Pro Pro Asn Val Ala Ser Pro 1 5 10 15

Ala Gly Tyr Ser His Ile Gly Val Gly Pro Asn Glu Ala Arg Tyr Val 20 25 30

Thr Ile Ala Gly Gln Ile Gly Gln Asp Ala Leu Gly Val Thr Asp Pro 35 40 45

Ala Tyr Glu Lys Gln Val Ala Gln Ala Phe Ala Asn Leu Arg Ala Cys 50 55 60

Leu Ala Ala Val Gly Ala Ser Ser Asn Asp Val Thr Lys Leu Asn Tyr 65 70 75 80

Tyr Ile Val Asp Tyr Ala Pro Ser Lys Leu Thr Ala Ile Gly Asp Gly 85 90 95

Leu Lys Ser Thr Phe Ala Leu Asp Arg Leu Pro Pro Cys Thr Leu Val 100 105 110

Pro Val Pro Ala Leu Ala Ser Pro Glu Tyr Leu Phe Glu Val Asp Ala 115 120 125

Thr Ala Leu Val Pro Gly His Ser Thr Pro Asp Asn Val Ala Asp Val 130 135 140

Val 145	Val	Val	Gly	Ala	Glγ 150	Leu	Ser	Э1У	Leu	Glu 155	Thr	Ala	Arg	Lys	Val 160
Glr	Ala	Alā	Gly	Leu 165	Ser	Сув	Leu	Val	Leu 170	Glu	Ala	Met	Asp	Arg 175	Vád
Glγ	Gly	Lys	Thr 180	Leu	Ser	Val	Gln	Ser 135	Gl;	Pro	Gly	Arg	Thr 190	Thr	Ile
Asrı	Asp	Leu 135	Gly	Ala	Ala	T:p	11e 200	Asr.	Asp	Ser	Asn	Gln 105	3er	Glu	Val
Ser	Arg 210	Leu	Phe	Glu	Arg	Phe 215	His	Leu	Glu	Gly	Glu 220	Iæu	Glr.	Arg	Thr
Thr 225	Glÿ	A∂n	Ser	∏e	His 230	G. n	Ala	Glr.	Asp	Gly 235	Th.r	Thr	Thr	Thr	Ala 240
Pro	Тул	Gly	Asp	Ser 245	Pro	Leu	Ser	Glu	Glu 250	Vál	Ala	€er	Alā	Leu 255	Ala
Glu	Leu	Leu	Pro 260	Val	Trp	Ser	Glr.	19u 265	Ile	Glu	Glu	Tyr	Ser 270	Leu	Glu
Asp	Pro	Lys 275	БlA	Ser	Pro	Gln	Ala 280	Lys	Arạ	Leu	Asp	Ser 135	Val	Ser	Phe
Ala	His 290	Tyr	Cys	Glu	Lys	Asp 295	Leu	Asr.	Leu	Pro	Ala 300	Val	Leu	Ser	Val
Ala 305	Asn	Gln	Ile	Thr	Arg 310	Ala	Leu	Leu	Gly	Val 315	Glu	Ala	His	Glu	Ile 320
Ser	Met	Leu	Phe	Leu 325	Thr	Агр	Tyr	Ile	Lys 330	Ser	Ala	Thr	Gly	Leu 335	Ser
Asn	Ile	Vál	Ser 340	Asp	Lys	L∵s	Asp	Gly 345	Gly	Gln	Тут	Met	Arg 350	Cys	Lys
Thr	Gly	Met 355	Gln	Ser	Ile	Cys	His 360	Ala	Met	Ser	Lys	Glu 365	Leu	Val	Crq

Gly Ser Val His Leu Asn Thr Pro Val Ala Gly Ile Glu Gln Ser Ala 371) 375 Ser Gly Cys Ile Val Arg Ser Ala Ser Gly Ala Val Phe Arg Ser Lys 390 395 400 Lys Val Val Val Ser Leu Pro Thr Thr Leu Tyr Pro Thr Leu Thr Ph.e 405 410 415 Ser Pro Pro Leu Pro Ala Glu Lys Gln Ala Leu Ala Glu Lys Ser Ile 420 425 430 Leu Gly Tyr Tyr Ser Lys Ile Val Phe Val Trp Asp Asn Pro Trp Trp 435 440 445 Arg Glu Gln Gly Phe Ser Gly Val Leu Gln Ser Ser Cys Asp Pro Ile 450 455 460 Ser Phe Ala Arg Asp Thr Ser Ile Glu Val Asp Arg Gln Trp Ser Ile 470 475 480 Thr Cys Phe Met Val Gly Asp Pro Gly Arg Lys Trp Ser Gln Gln Ser 485 490 Lys Gln Val Arg Gln Lys Ser Val Trp Asp Gln Leu Arg Ala Ala Tyr 500 505 Glu Asn Ala Gly Ala Gln Val Pro Glu Pro Ala Asn Val Leu Glu Ile 515 Glu Trp Ser Lys Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr 530 535 540 Gly Leu Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe 545 550 555 560 Lys Cys Val His Phe Val Gly Thr Glu Thr Ser Leu Val Trp Lys Gly 565 570 575 Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val 580 585 Val Ala Ser Leu Val Pro Ala Ala

595 600

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-(.:10>
       37
HU111 1929
-1.11.20 DNA
-0.1132 Exophiala spinifera
4.0200
didlik Intron
31.720 (739)..(311)
\{1,1,1,3,5\}
-1.1.130-
Hallo Intron
+0.0.28 + (1134)...(1136)
42.13+
414 10 : 37
athygractic paccyageta cateaateep coasacgteg optopolago agggtatibe
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dawatoggog taggoodaaa ogaagogagg tatgtgacaa tagotggada gattggacaa
                                                                        1.20
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^{+02100 33} +0211 600

HART PRT

^{-1.113 -} Exophiala spinifera

^{+14007 33}

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Lys	Glr.	Val	Arg 500	Gln	Lys	Ser	Val	Trp 505	Asp	Gln	Leu	Arg	Ala 510	Ala	Tyr
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Glu	Trp 530	Ser	Lys	Gln	Gln	Tyr 535	Phe	Gln	Gly	Ala	Pro 540	Ser	Ala	Val	Tyr

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Pro	Val	Ser 115	Ala	Leu	Ser	Ser	Pro 120	Glu	Tyr	Leu	Phe	Glu 125	Val	Asp	Ala
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Leu	Phe	Leu	Thr	Asp 325	Tyr	Ile	Lys	Ser	Ala 330	Th.r	Gl∵	Leu	Ser	Asn 335	fle
Pt.∈	Ser	Asp	Lys 340	Lys	Asp	Gly	Gly	Gin 345	Туг	Met	Arg	Cys	Lys 350	Thr	Gly
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Vāl	Val	Ser	Leu	Pro 405	Thr	Thr	Leu	Tyr	Pro 410	Thr	Leu	Thr	Phe	Ser 415	Pro
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Ser Lys Gln Gln Tyr Phe Gln Gly Ala Pro Ser Ala Val Tyr Gly Leu 535 540

Asn Asp Leu Ile Thr Leu Gly Ser Ala Leu Arg Thr Pro Phe Lys Ser 545 550 555 560

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Gln	Gly 450	Phe	Ser	Gly	Val	Leu 455	Gln	Sur	Ser	Cys	Asp 460	Pro	Ile	Ser	Phe
Ala 465	Arg	Asp	Thr	Ser	Ile 470	Glu	Val	Asp	Arç	Gln 475	Trp	Ser	Ile	Thr	Cys 480
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Ala	Gly	Ala 515	Gln	Val	Pro	Glu	Pro 520	Ala	Asn	Val	Leu	Glu 525	Ile	Glu	Trp
Ser	Lys 530	Gln	Gln	Tyr	Phe	Gln 535	Gly	Ala	Prc	Ser	Val 540	Val	Tyr	Gly	Leu
Asn 545	Cys	Leu	Asn	Thr	Leu 550	Gly	Ser	Ala	Leu	Arg 555	Thr	Pro	Phe	Lys	Gly 560
Val	His	Phe	Val	Gly 565	Thr	Glu	Thr	Ser	Leu 570	Val	Trp	Lys	Gly	Tyr 575	Met
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gangrittingg negtjadaja dentgodtan gagasadagg tilgoddaago attogodaad
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otgopagott gbottgobgo agttggagod acttbaaaacg adattacbaa gotbaattac
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                                                                          3:11
titige bottig abaggiotood toottigbadg otggtgobag tigooggoodt ggottbadot
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gttgdggaog tggtogtggt gggogotggo ttgagoggtt tggagaoggo abgbaaagto
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                                                                         5.40
otgawogtab aatogggtoo oggbaggaog actatoaatg abbtoggogo tgogtggato
                                                                         \rho_{i}\cap (j)
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Thr Ile Ala Gly Gln Ile Gly Gln Asp Ala Ser Ala Val Thr Asp Pro $35 \hspace{1cm} 40 \hspace{1cm} 45 \hspace{1cm}$

Ala Tyr Glu Lys Gln Val Ala Gln Ala Phe Ala Asn Leu Arg Ala Cys 50 55 60

Leu Ala Ala Val Gly Ala Thr Ser Asn Asp Ile Thr Lys Leu Asn Tyr 65 70 75 80

Tyr Ile Val Asp Tyr Asn Pro Ser Lys Leu Thr Ala Ile Gly Asp Gly 85 90 95

Leu	Lys	Ala	Thr	Phe	Ala	Leu	Asp	Arq 105	Leu	Pro	Pro	Cys	Thr 110	Leu	Val
Pro	Val	Pro 115	Ala	Leu	Ala	Ser	Pro 120	-3.1 u	Tyr	Leu	Phe	31u 125	Val	Asp	Ala
Tnr	Ala 130	Leu	Vā.	Pro	Glγ	His 135	Ser	The	Pr⊙	Asp	Asr. 140	Val	Ala	Asp	Val
V.a.l 145	Väl	Vāl.	Gly	Ala	Gly 150	Leu	Ser	Gly	Leu	Glu 155	Thr	Ala	Arg	Lys	Val 160
Glr.	Ala	Ala	G1;;	Leu 165	Ser	Cys	Let.	7aì	Leta 170	Glu	Alā	:1et	Asp	Arg 175	Val
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A.sp	Leu	Gly 195	:, 1 <i>F</i> .	Ala	Trp	Ile	Asr. 200	Asp	Ser	Asn	Glr.	Jer .:05	Glu	Val	Lys
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Gly	Ser	Leu	Leu	Ser 245	Glu	Glu	Val	Ala	Ser 250	Ala	Leu	Λla	Glu	Leu 255	Leu
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Val 465	Asp	Arg	Gln	Trp	Ser 470	Ile	Thr	Cys	Phe	Met 475	Val	Gly	Asp	Pro	Gly 480
Arg	Lys	Trp	Ser	Gln 485	Gln	Ser	Lys	Gln	Val 490	Arg	Gln	Lys	Ser	Val 495	Trp
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13 Fhirocladiella atrovirens

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- 223 -

- 111:

-221. Intron

+2220 - (1134) ... (1185)

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Tyr Glu Lys Gln Val Ala Gln Ala Phe Ala Asn Leu Arg Ala Cys Leu 50 55 60

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Pro	Arg	Lys	Trp	Ser 485	Gln	Gln	Ser	Ŀλ.ε	Glr: 490	Val	Arg	Gln	Lys	Ser 495	Val
Trp	Asn	Gln	Leu 500	Arg	Ala	Ala	Tyr	Glu 505	Asn	Ala	Gly	Ala	Gln 510	Val	Pro

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Gln Ala Pro 53Ĵ	Ser Ala	Val Tyr 535	Gly Leu	Asn Cys	Leu <i>F</i> 540	Ann Thr	Leu Gly
Ser Ala Leu 545	Arg Thr	Pro Phe 530	Lys Gly	Val Hia 550	Ph⊕	Val Gly	Thr Glu 560
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Glr. Arg Gly	Ala Ala 580	Gl _i u Val	Val Pro 585	Ser Leg	Val :	Pro Ala 590	Ala
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44000 47							
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Gly 545	Leu	Asn	Asp	Leu	Ile 550	Thr	Leu	Gly	Ser	Ala 555	Leu	Arg	Thr	Pro	Phe 560
Lys	Ser	Val	His	Phe 565	Val	Gly	Thr	Glu	Thr 570	Ser	Leu	Val	Trp	Lys 575	Gly

Tyr Met Glu Gly Ala Ile Arg Ser Gly Gln Arg Gly Ala Ala Glu Val 580 585 Val Ala Ser Leu Val Fro Ala Ala 595 600 0.210 4 48 <011 + 1392</pre> 3212 - DNA 1113 · Unknown -1220 -+12.23 · Cys (-) APAO; removal of cys 461 (Exophiala spinifera) · 13.3() · · 331 · CDS $422 \cdot (1) \cdot (1392)$ ·1023 · <400 × 48 ass gad asd gtt gdg gad gtg gta gtg gtg ggd gdt ggd ttg agd ggt 48 Lys Asp Asn Val Ala Asp Val Val Val Gly Ala Gly Leu Ser Gly ttg gag acg gca ege aaa gte eag gce gce ggt etg tee tge ete gtt 95 Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly Leu Ser Cys Leu Val 20 25 30 ctt gag gog atg gat ogt gta ggg gga aag act otg ago gta caa tog 144 Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr Leu Ser Val Gln Ser 35 40 ggt see gge agg acg act ate aas gae ete gge get geg tgg ate aat 193 Gly Pro Gly Arg Thr Thr Ile Asn Asp Leu Gly Ala Ala Trp Ile Asn 55 gac age aac caa age gaa gta tee aga ttg ttt gaa aga ttt cat ttg 240 Asp Ser Asn Gln Ser Glu Val Ser Arg Leu Phe Glu Arg Phe His Leu gag ggc gag etc cag agg acg act gga aat toa atc cat caa gca caa 288 Glu Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln gac ggt aca acc act aca gct cet tat ggt gac tee ttg etg age gag 336 Asp Gly Thr Thr Thr Ala Pro Tyr Gly Asp Ser Leu Leu Ser Glu 100 105 110 gag gtt gca agt gca ctt gcg gaa ctc ctc ccc gta tgg tct cag ctg 384 Glu Val Ala Ser Ala Leu Ala Glu Leu Leu Pro Val Trp Ser Gln Leu 115 120 ato gaa gag cat ago ott caa gac oto aag gog ago oot cag gog aag 432 Ile Glu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Pro Gln Ala Lys 130 135

ogg Arg 145	ctc Leu	gac Asp	agt Ser	gtg Val	ago Ser 150	ttc Phe	gcg Ala	cac His	tac Tyr	tgt Cys 155	gag Glu	aaj Lys	jaa Glu	cta Leu	aac Asn 160	430
ttg Dea	cct Pro	gct Ala	gtt Val	ata Seu 165	ggd	gta Val	gca Ala	aac Asn	cag Gln 170	atc Ile	aca Thr	ogo Arg	gct Ala	otg Leu 175	ata Leu	5.%
g #t Gly	gtg Val	gaa Glu	gcc Ala 130	cac His	gag Glin	atc Ile	agc Ser	atg Met 185	att Leu	ttt Phe	ata Leu	acc Thr	gac Asp 190	tac Tyr	ato Ile	576
aag Lys	agt Ser	gdd Ala 195	acc Thr	ggt Gly	oto Leu	agt Ser	aat Asn 200	att Ile	ttd Phe	tog Ser	Asp 3ac	аад Ly <i>з</i> 205	aaa Lys	jac Asp	Gly Gly	61
egy A alaa	cag Gln 210	tat Tyr	atg Met	ega Arg	tgc Cys	aaa Lys 215	aca Thr	ggt Gly	atg Met	cag Gln	tog Ser 220	att Ile	cys cys	cat His	god Ala	670
atg Met 225	tca Ser	aag Lys	gaa Glu	ott Leu	gtt Val 230	cca Pro	GLA	tca Ser	gig Val	cac His 235	ctc Leu	aac Asn	acc Thr	add Pro	gno Val 240	720
					tog Ser											768
					agc Ser											816
ttg Leu	tat	~~~		± ± α	aca	ttt	± .3 a	~ ~ ~								864
цец	Tyr	Pro 275	acc Thr	Leu	Thr	Phe	Ser 280	Pro	Pro	ctt Leu	ecc Pro	gee Ala 285	gag Glu	aag Lys	Gin	0.04
gca	Tyr	Pro 275 gcg	Thr gaa	Leu aat	Thr tot Ser	Phe atc	Ser 230 ctg	Pro ggc	Pro tac	Leu tat	Pro agc	Ala 285 aag	Glu ata	Lys	Gin ttc	911
gca Ala gta	ttg Leu 290	Pro 275 gcg Ala gac	Thr gaa Glu aag	Leu aat Asn	Thr	Phe atc Ile 295	Ser 280 ctg Leu cgc	Pro ggc Gly gaa	Pro tac Tyr caa	Leu tat Tyr	agc Ser 300	Ala 285 aag Lys tog	Glu ata Ile	Lys gto Val	Gin ttc Phe	
gca Ala gta Val 305	Tyr ttg Leu 290 tgg Trp	Pro 275 gcg Ala gac Asp	Thr gaa Glu aag Lys	aat Asn ceg Pro	Thr tot Ser tgg Trp	Phe atc Ile 295 tgg Trp	Ser 230 ctg Leu cgc Arg	Pro ggc Gly gaa Glu	Pro tac Tyr caa Gln	tat Tyr ggc Gly 315	agc Ser 300 ttc Phe	Ala 285 aag Lys teg Ser	Glu ata Ile ggc Gly	Lys gtc Val gtc Val atc	Gin ttc Phe ctc Leu 320	911
gca Ala gta Val 305 caa Gln	Tyr ttg Leu 290 tgg Trp tcg Ser	Pro 275 gcg Ala gac Asp agc Ser	Thr gaa Glu aag Lys tcc Ser caa	Leu aat Asn ceg Pro gac Asp 325 tgg	Thr tct Ser tgg Trp 310 ccc	Phe atc Ile 295 tgg Trp atc Ile att	Ser 280 ctg Leu cgc Arg tca Ser	Pro ggc Gly gaa Glu ttt Phe	Pro tac Tyr caa Gln gcc Ala 330 ttc	tat Tyr ggc Gly 315 aga Arg	Pro agc Ser 300 ttc Phe gat Asp	Ala 285 aag Lys teg Ser acc Thr	Glu ata Ile ggc Gly agc Ser	Lys gtc Val gtc Val atc Ile 335 ccg	Gin ttc Phe ctc Leu 320 gac Asp	911 960

Asp Gln Leu A 370	go goa go arg Ala Al	c tac ga a Tyr Gl 375	g aac ge u Asn Ala	e ggg ges a Gly Ala 380	Gln Val	oda g Pro G	rag 1152 :lu
ceg gee wae g Pro Ala Asn V 385	tg ata ga al Leu Gl 39	u Ile Gl	g tgg too u Trp Se:	g aag cag r Lys Glm 395	cag tat Gln Tyr	Phe 3	aa 1200 In 00
gga get beg a Gly Ala Pro S	ge gee gt er Ala Va 405	o tat gg l Tyr Gl	g otg aad y Leu Asi 410	n Asp Leu	atc aca Ile Thr	ctg g Leu G 415	gt 1243 ly
teg geg ete a Ser Ala Leu A 4	ga acg co rg Thr Pr 20	g ttd aad o Phe Ly.	g agt gti s Ser Val 425	cat tto L His Phe	gtt gga Val Gly 430	acg g Thr G	ag 1296 lu
aby tot tta g Thr Ser Leu V 435	tt tgg aa al Trp Ly	a ggg ta s Gly Ty: 440	r Met Gli	a ggg gcc i Gly Ala	ata oga Ile Arg 445	tog g Ser G	gt 1344 ly
daa dga ggt g Gln Arg Gly A 450	ct gca ga la Ala Gl	a gtt gto u Val Val 455	g got ago l Ala Sei	c stg gtg Leu Val 460	cca gca Pro Ala	gca t Ala	ag 1392
<pre><310> 49 <311> 463 <312> PRT <313> Unknow</pre>	_						
·213 · Unknow	[]						
12202	n) APAO; r	emoval o:	ā cysteir	ne 461 (E:	xophiala	spini	fera)
12202		emoval o:	Elbysteir	ne 461 (E	xophiala	spini	fera)
-02002 -02032 Cys (-) APAO; r						
H220 > H223 > Cys (- H400 > 49) APAO; r al Ala As 5	p Val Val	. Val Val 10	. Gly Ala	Gly Leu	Ser G	ly
H220 > H203 > Cys (- H400 > 49 Lys Asp Asn V 1 Leu Glu Thr A) APAO; r al Ala As 5 la Arg Ly 0	p Val Vai s Val Glr	Val Val 10 n Ala Ala 25	. Gly Ala n Gly Leu	Gly Leu Ser Cys 30	Ser G 15 Leu V	ly al
H220 Age Cys (- H203 Asp Asp Val Leu Glu Thr A 2 Leu Glu Ala M) APAO; r al Ala As 5 la Arg Ly 0 et Asp Ar	p Val Vai s Val Glr g Val Gly 40	Val Val 10 1 Ala Ala 25 7 Gly Lys	Gly Ala Gly Leu Thr Leu	Gly Leu Ser Cys 30 Ser Val 45	Ser G 15 Leu V	ly al er
H2200 / H2203 / Cys (- H2005 49) Lys Asp Asn V 1 Leu Glu Thr A 2 Leu Glu Ala M 35) APAO; r al Ala As 5 la Arg Ly 0 et Asp Ar	p Val Val s Val Glr g Val Gly 40 r Ile Asr 55	Val Val 10 n Ala Ala 25 v Gly Lys	Gly Ala Gly Leu Gly Ala Gly Ala 60	Gly Leu Ser Cys 30 Ser Val 45 Ala Trp	Ser G 15 Leu V Gln S	ly al er sn

Asp	Gly	Thr	Thr 190	Thr	Thr	Ala	Pro	Tyr 105	Gly	Asp	Ser	Leu	Leu 110	Ser	Glu
Glu	Val	Ala 115	Ser	Ala	Leu	Ala	Glu 120	Leu	Leu	Pro	Val	Trp 125	Ser	Gln	Leu
Ile	Glu 130	Glü	His	Ser	Leu	Gln 135	Азр	Leu	lys	Alā	Ser 140	Pro	Glr.	Ala	lys
Arg 145	Leu	Asp	Ser	Val	Ser 150	Ph∈	Alà	His	Туг	Cys 155	Glu	Lys	Glu	Leu	Asn 160
Leu	Pro	Alā	Val	Leu 165	Э1у	Val	Ala	Asn	Gln 170	Il€	Thr	Arg	Alā	Leu 175	Leu
Gly	Val	Glu	Ala 180	His	Glu	fle	Ser	Met 185	Leu	Phe	มี _เ ลเร	Thr	Asp 190	Tyr	Lle
Lys	Ser	Ala 195	Thr	Gly	Leu	Ser	Asr. 200	Il€	Phe	Ser	Asp	Lys 205	Ъys	Asp	G. y
Gly	Gln 210	Тут	Met	Arg	Cys	Lys 215	Th.r	Gly	Met	Gln	Ser 220	Ile	Cys	His	Ala
Met 225	Ser	ГЛЕ	Glu	Leu	Val 230	Pro	Gly	Ser	Val	His 235	Leu	Asn	Thr	Pro	Val 240
Ala	Glu	Ile	Glu	Gln 245	Ser	Ala	Ser	Gly	Cys 250	Thr	Va.L	Arg	Ser	Ala 255	Ser
Gly	Ala	Val	Phe 260	Arg	Ser	Lys	Lys	Val 265	Val	Val	Ser	Leu	Pro 270	Thr	Thr
Leu	Tyr	Pro 275	Thr	Leu	Thr	Phe	Ser 280	Pro	Pro	Leu	Pro	Ala 285	Glu	Lys	Gln
Ala	Leu 290	Ala	Glu	Asn	Ser	Ile 295	Leu	Gly	Tyr	Туг	Ser 300	Lys	Ile	Val	Phe
Val 305	Trp	Asp	Lys	Pro	Trp 310	Trp	Arg	Glu	Gln	315	Ph⊖	Ser	Gly	Val	Leu 320

Gl: Ser Ser Ser	Asp Pro 1 325	Ile Ser Ph	e Ala Arg 330	Asp Thr Ser	Ile Asp 335
Va. Asp Arg Gln 340	Trp Ser	Ile Thr Cy 34		Val Gly Asp 350	Pro Gly
Arg Lys Trp Ser 355	Glm Glm S	Ser Lys Gl 360	n Val Arg	Gln Lyx Ser 365	Val Trp
Asp Glr. Leu Arg 376		Tyr Glu As 375	n Ala Gly	Ala Gir. Val 380	Pro Glu
Pro Ala Asr. Val 385	Leu Glu 1 390	Ile Glu Tr	p Ser Lya 395	Gln Gir. Tyr	Phe Glr. 400
Gly Ala Pro Ser	Ala Val 3 405	Tyr Gly Le	u Asn Asp 410	Leu Ile Thr	Leu Gly 415
Ser Ala Leu Arg 420		Fhe Lys Se 42		Phe Val Gly 430	Thr Glu
Thr Ser Leu Val	Trp Lys (Gly Tyr Me 440	t Glu Gly	Ala Ile Arg 441	Ser Gly
Gln Arg Gly Ala 450		Val Val Al 455	a Ser Leu	Val Pro Ala 460	Ala
<pre><210> 50 </pre> <pre><2110> 1392 </pre> <pre><212> DNA </pre> <pre><213> Unknown</pre>					
<210. <213. Cys (-)	APAO; remo	oval of cy	s 359 and	461 (Emophia	ala spinifera)
<pre><dd><dd><dd><dd><dd><dd><dd><dd><dd><d< td=""><td>92)</td><td></td><td></td><td></td><td></td></d<></dd></dd></dd></dd></dd></dd></dd></dd></dd></pre>	92)				
<400 · 50 aaa gad aad gtt Lys Asp Asn Val 1					
ttg gag acg gca Leu Glu Thr Ala					

			30					25					30			
ctt Leu	gag Glu	gcg Ala 35	atg Met	gat Asp	cgt Arg	gta Val	999 Gly 40	gga Gly	aag Lys	act Thr	atg Leu	agc Ser 45	gta Val	caa Gln	tog Ser	144
ggt Gly	ada Pro 50	ggc Gly	agg Arg	acg Thr	act Ihr	atc Ile 55	aac Asn	gac Asp	et e Leu	ggc	got Ala 60	gag Ala	tgg Trp	atc Ile	aat Asn	19.2
gac Asp 65	agc Ser	aac Asn	caa Gln	agc Ser	gaa Glu 70	gta Val	tec Ser	aga Arg	tig L⊕u	tht Phe 75	gaa Glu	aga Arg	ttt Fhe	cat His	ttg Leu 80	24:)
gag Glu	ggc Gly	gag Glu	oto Leu	cag Gln 85	agg Arg	acg Thr	act: Thr	gga Gly	aat Asn 9:)	tda Ser	atc Ile	cat His	caa Gln	gca Ala 95	caa Gln	294
gac Asp	ggt Gly	aca Thr	acc Thr 100	act Thr	aca Thr	gct Ala	pot Pro	tat Tyr 105	ggt Gly	gac Asp	tec Ser	ttg Leu	ctg Leu 110	agc Ser	gag Glu	ઉરૂઇ
gag Glu	gtt Val	gca Ala 115	agt Ser	gca Ala	ctt Leu	gcg Ala	gaa Glu 120	otc Leu	ctc Leu	occ Pro	gta Val	tag Trp 135	tct Ser	cag Gln	ctg Leu	354
atc Ile	gaa Glu 130	gag Glu	cat His	agc Ser	ctt Leu	caa Gln 135	уас Азр	ctc Leu	aag Lys	gcg Ala	agc Ser 140	oct Pro	cag Gln	gcg Ala	aag Lys	432
cgg Arg 145	ctc Leu	gac Asp	agt Ser	gtg Val	agc Ser 150	ttc Phe	gcg Ala	cac His	tac Tyr	tgt Cys 155	gag Glu	aag Lys	gaa Glu	cta Leu	aac Asn 160	480
ttg Leu	cct Pro	gct Ala	gtt Val	etc Leu 165	ggc Gly	gta Val	gca Ala	aac Asn	cag Gln 170	atc Ile	aca Thr	cgc Arg	gct Ala	ctg Leu 175	ctc Leu	528
ggt Gly	gtg Val	gaa Glu	gec Ala 180	cac His	gag Glu	atc Ile	agc Ser	atg Met 185	ctt Leu	ttt: Phe	ctc Leu	acc Thr	gac Asp 190	tac Tyr	atc Ile	576
aag Lys	agt Ser	gcc Ala 195	acc Thr	ggt Gly	ctc Leu	agt Ser	aat Asn 200	att Ile	ttc Phe	tag Ser	gac Asp	aag Lys 205	aaa Lys	gac Asp	ggc Gly	624
Gly Gga	cag Gln 210	tat Tyr	atg Met	cga Arg	tgc Cys	aaa Lys 215	aca Thr	ggt Gly	atg Met	cag Gln	tog Ser 220	att Ile	tcg Ser	cat His	gcc Ala	672
atg Met 225	tca Ser	aag Lys	gaa Glu	ctt Leu	gtt Val 230	cca Pro	ggc Gly	tca Ser	gtg Val	cac His 235	ctc Leu	aac Asn	acc Thr	ccc Pro	gtc Val 240	720
gct Ala	gaa Glu	att Ile	gag Glu	cag Gln 245	tcg Ser	gca Ala	tcc Ser	ggc Gly	tgt Cys 250	aca Thr	gta Val	cga Arg	tcg Ser	gcc Ala 255	tog Ser	768

	gtg 7al								816
	000 Pro 279								E 6.;
	gog Ala								911.
	gad Asp								jiģ(i
	age Ser								1008
	ogā Arg						 -		1056
	tgg Trp 355								1104
	ata Leu								1252
	aac Asr.								1200
	oog Pro								1248
	ctc Leu						 _		1296
	tta Leu 435								1344
	Gly Gly							tag	1392

^{+1210 + 51} +1211 + 463 +1212 + PRT

√.21	.3,•	Unkr	nown												
.: <u>:::::::::::::::::::::::::::::::::::</u>		Cys	(-)	APAC); re	mova	l of	cys	359	and	1 461	(Ex	ophi	ala	spinifera)
<[4]	(.).	51													
Lys 1	Asp	Asn	. Val	Ala 5	Asp	Val	Val	Val	Val 10	Gly	Ala	Gly	Leu	Ser 15	Gly
Leu	Glu	Thr	Ala 20	Arg	Lys	Val	3ln	Ala 25	Ala	Gly	Leu	Ser	Cys 30	Leu	Val
L€u	Glu	Ala 35	Met	Asp	Arg	Val	Gly 40	Gly	Lys	Thr	Leu	Ser 45	Val	Gln	Ser
Glγ	Fro 50	Gly	Arg	Thr	Thr	Ile 55	Asn	Asp	Leu	Gl _y .	Ala 60	Ala	Trp	Ile	Asn
Asp 65	Ser	Asn	Gln	Ser	Glu 70	Val	Ser	Arg	Leu	Phe 75	Glu	Arg	Phe	His	Leu 80
Glu	Gly	Glu	Leu	Gln 85	Arg	Thr	Thr	Gly	Asn 90	Ser	Ile	His	Gln	Ala 95	Gln
Asp	Gly	Thr	Thr 100	Thr	Thr	Ala	Pro	Tyr 105	Gly	Asr.	Ser	Leu	Leu 110	Ser	Glu
Glu	Val	Ala 115	Ser	Ala	Leu	Ala	Glu 120	Leu	Leu	Pro	Val	Trp 125	Ser	Gln	Leu
Ile	Glu 130	Glu	His	Ser	Leu	Gln 135	Asp	Leu	Lys	Ala	Ser 140	Pro	Gln	Ala	Lys
Arg 145	Leu	Asp	Ser	Val	Ser 150	Phe	Ala	His	Tyr	Cys 155	Glu	Lys	Glu	Leu	Asn 160
Leu	Pro	Ala	Val	Leu 165	Gly	Val	Ala	Asn	Gln 170	Ile	Thr	Arg	Ala	Leu 175	Leu
Gly	Val	Glu	Ala 180	His	Glu	Ile	Ser	Met 185	Leu	Phe	Leu	Thr	Asp 190	Tyr	Ile

Lys Ser Ala Thr Gly Leu Ser Asn Ile Phe Ser Asp Lys Lys Asp Gly 195 200 205

Gly	Gln 210	Tyr	Met	Arg	Cys	Lys 215	Thr	Gly	Met	Gln	Ser 220	Ile	Ser	His	Ala
Met 225	Ser	Lys	Glu	Leu	Val 230	Pro	Gly	Ser	Val	His 235	Leu	Asn	Thr	Pro	Val 240
Ala	Glu	Ile	Glu	Gln 245	Ser	Ala	Ser	Glγ	Cys 250	Thr	Val	Arg	Ser	Ala 255	Ser
Gly	Ala	Val	Phe 260	Arg	Ser	Lys	Lys	Val 265	Val	Val	Ser	Leu	Pro 270	Thr	Thr
Leu	Tyr	Pro 275	Thr	Leu	Thr	Phe	Ser 230	Pro	Pro	Leu	Pro	Ala 285	Glu	Lys	Gln
Ala	Leu 290	Ala	Glu	Asn	Ser	Ile 295	Leu	Gly	Tyr	Tyr	Ser 300	Lys	Ile	Val	Phe
Val 305	Trp	Asp	Lys	Pro	Trp 310	Trp	Arg	Glu	Gln	Gly 315	Phe	Ser	Gly	Val	Leu 320
Gln	Ser	Ser	Ser	Asp 325	Pro	Ile	Ser	Phe	Ala 330	Arg	Asp	Thr	Ser	Ile 335	Asp
Val	Asp	Arg	Gln 340	Trp	Ser	Ile	Thr	Cys 345	Phe	Met	Val	Gly	Asp 350	Pro	Gly
Arg	Lys	Trp 355	Ser	Gln	Gln	Ser	Lys 360	Gln	Val	Arg	Gln	Lys 365	Ser	Val	Trp
Asp	Gln 370	Leu	Arg	Ala	Ala	Tyr 375	Glu	Asn	Ala	Gly	Ala 380	Gln	Val	Pro	Glu
Pro 385	Ala	Asn	Val	Leu	Glu 390	Ile	Glu	Trp	Ser	Lys 395	Gln	Gln	Tyr	Phe	Gln 400
Gly	Ala	Pro	Ser	Ala 405	Val	Tyr	Gly	Leu	Asn 410	Asp	Leu	Ile	Thr	Leu 415	Gly
Ser	Ala	Leu	Arg 420	Thr	Pro	Phe	Lys	Ser 425	Val	His	Phe	Val	Gly 430	Thr	Glu

Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Ala Ile Arg Ser Gly 435 440 445
Gln Arg Gly Ala Ala Glu Val Vil Ala Ser Leu Val Pro Ala Ala 450 455 460
H210 x 52 H211 + 1392 H312 + DMA H313 + Unknown
<pre>CD20 -Cys (-) APAO; removal of cys 169, 359, and 461 (Exophiala spinifera)</pre>
+ 200 + +2221 + CDS +2222 + (1)(1392) +2233 +
0400 + 52 awa gad wad gtt gog gad gtg gta gtg gtg ggd gdt ggd ttg wgd ggt 48 Lys Asp Asn Val Alw Asp Val Val Val Val Gly Alw Gly Leu Ser Gly 1 5 10 15
tig gag acg gca cgc aaa gtc cag gcc gcc ggt ctg agc tcc ctc gtt — 36 Leu Glu Thr Ala Arg Lys Val Gln Ala Ala Gly Leu Ser Ser Leu Val 20 — 25 — 30
ott gag gog atg gat ogt gta ggg gga aag act otg ago gta caa tog 144 Leu Glu Ala Met Asp Arg Val Gly Gly Lys Thr Leu Ser Val Gln Ser 35 40 45
ggt dod ggd agg adg act atd aad gad dto ggd gdt gdg tgg atd aat 192 Gly Pro Gly Arg Thr Thr Ile Asn Asp Leu Gly Ala Ala Trp Ile Asn 50 55 60
gac ago aac caa ago gaa gta too aga ttg ttt gaa aga ttt cat ttg 240 Asp Ser Asn Gln Ser Glu Val Ser Arg Leu Phe Glu Arg Phe His Leu 65 70 75 80
gag ggc gag ctc cag agg acg act gga aat toa atc cat caa gca caa 288 Glu Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln 85 90 95
gac ggt aca acc act aca gct cct tat ggt gac tec ttg ctg agc gag 336 Asp Gly Thr Thr Thr Ala Pro Tyr Gly Asp Ser Leu Leu Ser Glu 100 105 110
gag gtt gca agt gca ett gcg gaa ete ete eee gta tgg tet eag etg 384 Glu Val Ala Ser Ala Leu Ala Glu Leu Leu Pre Val Trp Ser Gln Leu 115 120 125
ato gaa gag cat ago ott daa gad otd aag gog ago oot dag gog aag 432 Ile Glu Glu His Ser Leu Gln Asp Leu Lys Ala Ser Pro Gln Ala Lys

	1.0,0					20.0					TAU					
egg Arg 145	ata Leu	gac Asp	agt Ser	gtg Val	ago Ser 150	ttc Ph.a	gog Ala	cac His	tac Tyr	tgt Cys 155	gag Glu	aag Lys	gaa Glu	sta ≟eu	aac Asn 169	480
		got Ala														523
		gaa Glu														576
		gos Ala 198														634
		tat Tyr														672
		aag Lys														720
		att []e														768
		gtg Val														815
		acc Pro 275														864
		gog Ala					Leu	Gly	$T_{Y}r$		Ser					912
		gac Asp														960
	-	agc Ser		-					_	-	_		-		_	1008
		oga Arg														1056
	-	tgg Trp 355			-		_	_		-		-		_		1104

gae daa ete ege gea gee tae gag aac gee ggg gee daa gte eea gag ——1152 Asp Gln Leu Arg Ala Ala Tyr Glu Asn Ala Gly Ala Gln Val Pro Glu 375 ——380	
cog dec aac gtg etc gaa atc gag tgg teg aag cag cag tat tte caa 1200 Pro Ala Asn Val Leu Glu Ile Glu Trp Ser Lys Gln Gln Tyr Phe Gln 240 390 395 400	
Gly Ala Pro Ser Ala Val Tyr Gly Leu Ash Asp Leu Ile Thr Leu Gly 405 410 415	
too gog etc aga acg cog ttc aag agt gtt cat ttc gtt gga acg gag — 1295 Ser Ala Leu Arg Thr Pro Phe Lys Ser Val His Phe Val Gly Thr Glu 420 — 425 — 430	
abd tot the gtt tgg amm ggg tat mtg gmm ggg gbb atm bgm tog ggt 1344. Thr Ser Leu Val Trp Lys Gly Tyr Met Glu Gly Alm Ile Arg Ser Gly 435. 440. 445.	
daa oga ggt got goa gaa gtt gtg got ago otg gtg oca goa goa tag — 1392 Glm Arg Gly Ala Ala Glu Val Val Ala Ser Leu Val Pro Ala Ala 450 — 455 — 460	
<pre> <210</pre>	
<220×	ι)
<pre><223> Cys (-) APAO; removal of cys 169, 359, and 461 (Exophiala spinifera</pre>	
<pre><223> Cys (-) APAO; removal of cys 169, 359, and 461 (Exophiala spinifera</pre>	
<pre><323> Cys (-) APAO; removal of cys 169, 359, and 461 (Exophiala spinifera <400> 53 Lys Asp Asn Val Ala Asp Val Val Val Gly Ala Gly Leu Ser Gly</pre>	
<pre><323> Cys (-) APAO; removal of cys 169, 359, and 461 (Exophiala spinifera <400> 53 Lys Asp Asn Val Ala Asp Val Val Val Gly Ala Gly Leu Ser Gly 1</pre>	
<pre><223> Cys (-) APAO; removal of cys 169, 359, and 461 (Exophiala spiniferal <400> 53 Lys Asp Asn Val Ala Asp Val Val Val Val Gly Ala Gly Leu Ser Gly 1</pre>	

Glu Gly Glu Leu Gln Arg Thr Thr Gly Asn Ser Ile His Gln Ala Gln

85	9	ı	.1	1			95	ō

Asp	Gly	Thr	Thr 100	Thr	Thr	Ala	Pro	Tyr 105	Gly	Asp	Ser	Leu	Leu 110	Ser	Glu
Glu	Val	Ala 115	Ser	Ala	Leu	Ala	Glu 120	Leu	Leni	Pro	Val	Trp 125	Ser	Gln	Leu
Ile	G1u 130	Glu	His	Ser	L⊕u	Gln 135	Asp	Leu	Lγs	Alâ	Ser 140	Pro	Gln	Ala	Lys
Arg 145	Len	Asp	Ser	Val	Ser 150	Phe	Alā	H 5:	Tyr	Cys 155	Glu	Lys	Glu	Leu	Aan 160
Leu	Pro	Ala	Val	Leu 165	Gly	Val	Alā	A.sri	G1 n 170	Il∈	Thr	Ārģ	Ala	Leu 175	Leu
G. y	Val	Glu	Ala 180	His	Glu	lle	Ser	Met 185	่นิดีน	₽'ne	Leu	Thr	Asp 190	Туг	Lie
Lys	Ser	Ala 195	Thr	Gly	Leu	Ser	Asn 200	I.e	Phe	Ser	Азр	Lys 205	Lуs	Asp	Gly
Gly	Gln 210	Tyr	Met	Arg	Сув	Lys 215	Thr	Gly	Met	Gln	Ser 220	Ile	Ser	His	A. a
Met 225	Ser	Lys	Glu	Leu	Val 230	Pro	Glγ	Ser	Val	His 235	Leu	Asn	Thr	Pro	Val 240
Ala	Glu	Ile	Glu	Gln 245	Ser	Alā	Ser	Gly	Cys 250	Thr	Vāl	Arg	Ser	Ala 255	Ser
Gly	Ala	Val	Phe 260	Arg	Ser	Lys	Lys	Val 265	Val	Vāl.	Ser	Leu	Pro 270	Thr	Thr
Leu	Туг	Pro 275	Thr	Leu	Thr	Phē	Ser 280	Pro	Pro	Leu	Pro	Ala 285	Glu	Lys	Gin
Ala	Leu 290	Alā	Glu	Asn	Ser	Ile 295	Leu	Gly	Tyr	Tyr	Ser 300	Lys	Ile	Val	Phe
Val 305	Trp	Asp	Lys	Pro	Trp 310	Trp	Arg	Glu	Gln	Gly 315	Phe	Ser	Gly	Val	Leu 320

Gln	Ser	Ser	Ser	Asp 325	Pro	Ile	Ser	Phe	Ala 330	Arg	Asp	Thr	Ser	Ile 335	Asp
Val	Asp	Arg	Gln 340	Trp	Ser	Ile	Thr	Cys 345	Phe	Met	Val	Glγ	Asp 350	Pro	31y
Arg	Lys	Trp 355	Ser	Gln	Glr	Ser	Lys 360	Glr.	Val	Arg	Gln	Lys 365	Ser	Val	Trp
Asp	Gln 370	Leu	Arg	Ala	Alā	Tyr 375	Glu	Asr.	Ala	Gly	Ala 380	Glr	Val	Pro	31u
Pro 385	Ala	Asn	Val	Leu	Glu 390	Ile	Glu	Trp	Ser	Lys 395	Gln	Gln	Туг	Phe	31n 400
Gly	Ala	Pro	Ser	Ala 405	Val	Tyr	Gly	Leu	Asn 410	Asp	Leu	Ile	Thr	Leu 415	Gly
Ser	Ala	Leu	Arg 420	Thr	Pro	Phe	Lys	Ser 425	Val	His	Phe	Val	Gly 430	Thr	Glu
Thr	Ser	Leu 435	Val	Trp	Lys	Gly	Туг 440	Met	Glu	Gly	Ala	Ile 445	Arg	Ser	Gly
Gln	Arg 450	Gly	Ala	Ala	Glu	Val 455	Val	Ala	Ser	Leu	Val 460	Pro	Ala	Ala	